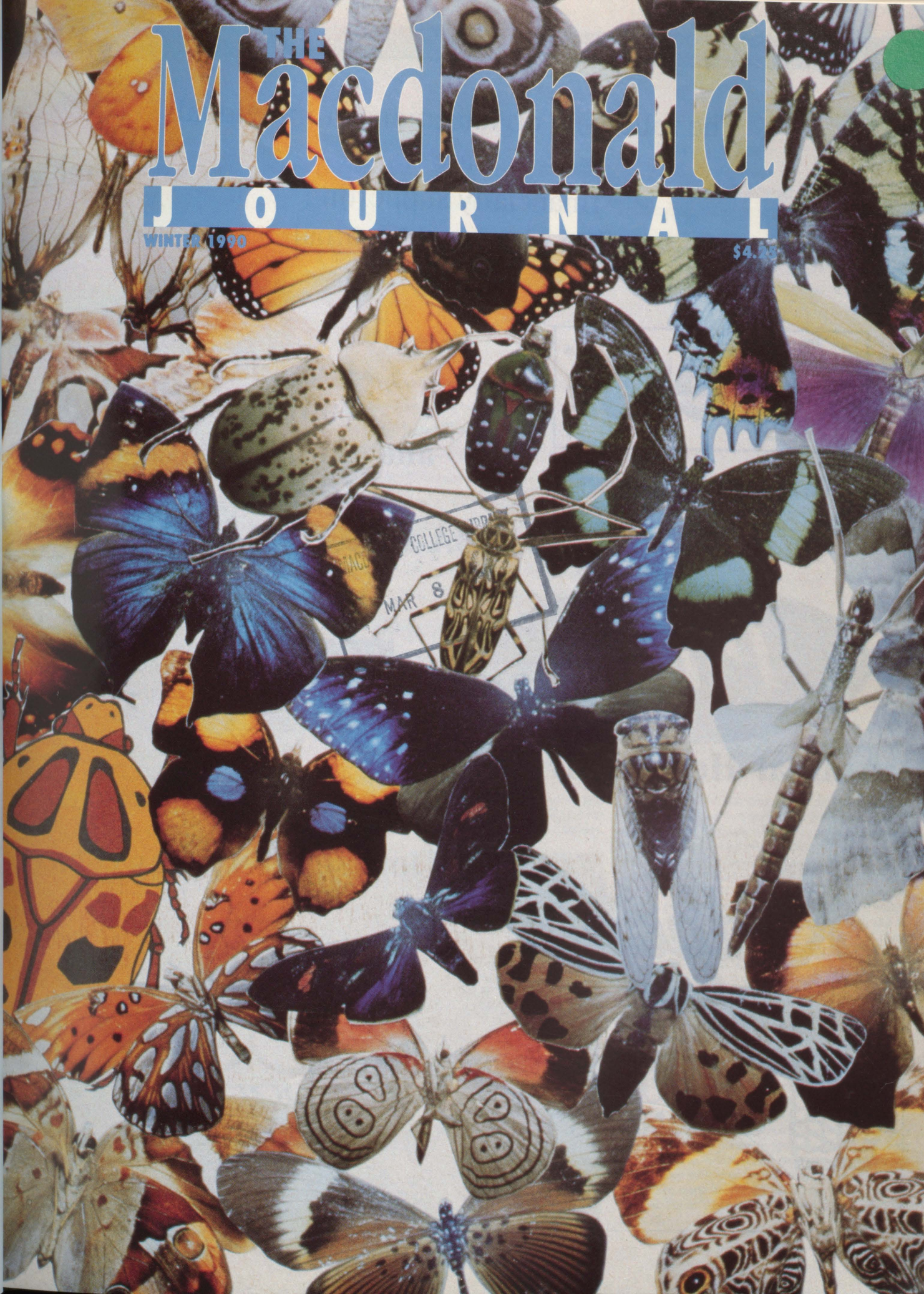


THE Macdonald

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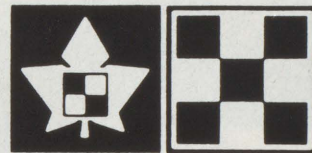


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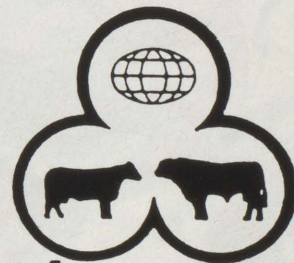
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LATE NEWS: There will be a Macdonald Journal after the May 1990 issue. The magazine has been given three years in which to become more self-supporting. Thanks to all who have sent messages of concern. We still need your support. Complete details in May issue.

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Cover Story

This delightfully colourful and artistic cover was designed, photographed, and created especially for *The Macdonald Journal* by Helen Cohen Rimmer,



MSc(Agr)'79, of the Department of Plant Science. Helen has done a magnificent job and is to be congratulated. Inspiration for the cover design came, in part, from the drawing of the masked beetle, lower left, by Dr. George Hsiung, Curatorial Associate of the Lyman Entomological Museum and Research Laboratory. Posters and cards featuring this drawing may be purchased from the Lyman. I have been waiting for the appropriate time to feature the Lyman and the Department of Entomology in the Journal and recent celebrations at the museum were the ideal focal point for an entrée into the wonderful world of insects at Macdonald College. I spent an enjoyable few hours in the Lyman with Helen and George as they chose subjects to photograph from the marvelous collection. My thanks to members of the Lyman Museum and to Dr. Jack McFarlane, Chairman of the Department of Entomology and the staff in Entomology for their help and contributions. Our readers are going to find an exciting world opening up for them. Cover identification page 13.

Ayerst Laboratories (Veterinary Division) has joined our group of Corporate Supporters: see inside front cover. My thanks to them for their support and interest and to those individuals, companies, and organizations who have made recent financial contributions to the Journal. These "Friends of the Journal" may be found on page 25.

Guest Editorial

The Importance of Insects

by Professor Jack McFarlane, Chairman,
Department of Entomology

February is not the time of the year when people think about insects. No blackflies or mosquitoes, no grasshoppers or cutworms, no May-flies or June-beetles. That is not to say that they are not present, but they are in quiescent, over-wintering stages which aren't at all apparent. Insects are well-adapted to survive our winters, many of them having chemicals which serve as antifreeze to prevent body fluids from freezing. Come the spring the earth is alive with insects. There are beneficial insects like the honey-bee, but many are destructive of plants and animals. They eat our crops and forests and suck our blood. They are the transmitters of many plant and animal diseases, including among the latter malaria and equine encephalitis.

Research on insects at Macdonald College has included basic research on the classification, physiology and ecology of insects, and applied research on the control of insects of economic importance. The department has benefitted from having a close association with the Lyman Entomological Museum and Research Laboratory, a systematics institution of world reputation. Dr. Keith Kevan, former director, has written a brief history of the Museum in verse. Marie-Claude Larivière, a graduate student in the department, tells us of the joys of collecting insects.

The honey-bee is among the beneficial insects that have been studied at Macdonald. Dr. Vernon Vickery, former curator of the Lyman Museum, has carried out research on the over-wintering of honey-bees. They are important, also, in pollination, and our bees have been used to pollinate college crops and fruit trees. Dr. Mike Sanborne, present curator of the Lyman Museum, has written about parasitic wasps, relatives of the honey-bee which are parasitic on crop-destroying insects, and hence are beneficial insects.

Other forms of life attack insects, and these are the subject of Dr. Gary Dunphy's article on biological control. These organisms include viruses, bacteria, fungi, and nematodes. Dr. Dunphy deals with the application of biotechnology to pest control.

Dr. Bill Yule gives us an account of advances in insect pesticides, both chemical and biological. The life-history of the plum curculio, a pest of tree fruits, is the subject of Dr. Stuart Hill's article on the hunchback of the apple orchard.

Mosquitoes, which suck the blood of man and domestic animals, are the subject of Dr. David Lewis's article. These insects are very difficult to kill, and attempts at control usually involve some kind of repellent substance or device, although a recent attempt at biological control looks promising.

You may have gathered by now that at Macdonald College we emphasize in our research the biological control of insect pests rather than chemical control. Both methods for control, and cultural and physical methods as well, are used in the modern approach to insect control, namely integrated pest management.

Graduate student Adriana Costero writes about Lyme disease, the disease of wild animals which has recently been recognized as a disease of man. This tick-borne disease was discovered in Lyme, Connecticut. It has been found in Quebec.

Dr. Vern Vickery, like Dr. Keith Kevan, has

been active in retirement. He has acted recently as president of the Orthopterists' Society, and writes in the Journal about his work on the Field Guides, a series of publications for that society. This work is of international importance.

Also of international significance is the work being done by the students of Dr. Stuart Hill, who explains these efforts in his article in Mac International.

The economic importance of insects has led to an emphasis on control of insects in our research in entomology at Macdonald College. Nevertheless insects are important ecologically, and this aspect is not neglected in our efforts at understanding insects. Dr. Robin Stewart, in "Seeking Solutions" tells of his work on the population dynamics of certain insect pests.

As far as the teaching of entomology is concerned, we have graduate programs leading to the MSc and PhD degrees. Although we have no undergraduate major in entomology, emphasizing instead a broad training in biology, students who register in the Applied Zoology major, in particular, and also the Environmental Biology major, may take a number of courses in entomology if they so wish.



Assembling for the official opening of the Lyman Museum (see page 5) were, 1 to r, Dr. Jack McFarlane, Director of the museum, P. M. Sanborne, Curator, Francis Lyman, Mrs. Helen Lyman, Brian Graham, Mrs. Faith Freindel, Miss R.E. Williams, Sydney Lyman, Mrs. Graham, Dr. William Freindel, and Dean Buckland.

The Lyman Museum's 75th Anniversary

On October 25, 1989, members of the Lyman family, graduates, students, and staff of the museum and Department of Entomology, and other invited guests from industry, government, and McGill gathered to celebrate the 75th anniversary of the Lyman Entomological Museum and Research Laboratory and the official opening of the museum in its new facilities in the Centennial Centre of Macdonald College. The museum was established in 1914 when Henry H. Lyman and his wife were drowned while sailing aboard the Empress of Ireland which foundered in the St. Lawrence. Mr. Lyman, an amateur entomologist, left his collection of 20,000 specimens, mostly butterflies and moths, a small library, and a \$40,000 bequest to maintain the collection, to McGill. That collection has increased to two million specimens of some 55,000 species and is second in Canada only to the Biostematics Research Centre in Ottawa. The collection continues to grow with some 100,000 specimens being added each year by professional and amateur collectors.

Until 1961 the museum was housed in the Redpath Museum on the downtown campus of McGill. As Entomologists were located at Macdonald, the move to Macdonald College was a logical one. Dr. V. R. Vickery, Curator of the museum from 1961 to 1986, and Dr. D.K. McE. Kevan, Director of the museum from 1972 to 1986, are credited with bringing the col-



Dr. D.K. McE. Kevan, Emeritus Professor of the Department of Entomology and a former Director of the Lyman Entomological Museum and Research Laboratory.



Emeritus Curator Vernon Vickery hanging a photograph of A.C. Sheppard, former Honorary Curator, on a wall in the museum. Photos of Professors Vickery and Kevan were also hung.



Museum Curator P. M. Sanborne tells the gathering something of the excellent work done by the past and present staff of the museum.



Robert Hyndman and Ernest Frey from Prizer found many aspects of the museum of great interest.



Dr. George Hsiung, Curatorial Associate, fascinated members of the group with the "antics" of the walking stick insect, part of the live specimens in the culture room.



Chantal Kilsdonk from DuPont Canada and Professor Garth Coffin from the Department of Agricultural Economics obviously enjoying their tour through the museum.



The celebrations provided an opportunity for old friends to meet: Andre Larochelle, Honorary Curator of the Lyman, Robert Trotter, Director, Biosystematics Research Centre (BRC), Ottawa, and a former graduate student with Dr. Vickery, Vernon Vickery, John Stainer, former graduate student with Dr. Kevan, and Giorgio Fontana, another former graduate student with Vernon Vickery.

lection in the Lyman up to an international standard. Visiting scientists from other countries come to see the collection. A particular strength is the collection of orthopteroid insects (grasshoppers and their relatives), which is cred-

ited as being probably one of the best in the world. At Macdonald the museum was first housed in the Biology Building. In 1978 it moved to the Macdonald-Stewart Building, and now occupies space in the Centennial Centre.

THE BALLAD OF THE LYMAN MUSEUM

(A Brief History of the Lyman Entomological Museum and Research Laboratory)

H. Lyman was a citizen
Of credit and renown.
A train-band major eke was he
Of Montreal's fair town.

H. Lyman was a natcher'list
Since he was but a lad,
But never a professional -
He had to help his dad

To peddle pharmaceuticals.
An M.A. of McGill,
He then took over all the firm
That's in Toronto still.

But he loved Lepidoptera,
Collecting when he could
And filling many cabinets
Of quality hard-wood.

H. Lyman was a bachelor
For almost all his life.
At fifty-sev'n, at last, he took
Miss Kirkby for his wife.

Their honeymoon was long delayed -
Till May, 'Fourteen - two years!
At last to England off they set,
But all would end in tears.

They sailed upon an "Empress" ship,
"Of Ireland," such was she,
That foundered just off Father Point -
Both Lymans lost at sea!

H. Lyman's will then proven was.
He left to Old McGill
His butterflies and, for their keep,
Some cash - grist to the mill.

Within one room the Museum
Of Redpath housed the hoard
Of books and butterflies and moths -
McGill charged bed and board !

The curator was Albert Winn,
Who served for many a day -
Honorary capacity,
Which means he got no pay!

In 'Thirty-one his mind had gone
(He died in 'Thirty-five),
So long associate George Moore
Kept Lyman's trust alive.

These worthy amateurs did much
To cast the insect net.
They added other Orders and
Did very few forget.

And so the treasure did increase
By gift from helping friends
(Like A.C. Sheppard, E. Munroe)
On whom success depends.

(I "treasure" said? Don't be misled;
I meant insects were got.
No monies except interest
Were added to the pot!)

The drawback with "The Lyman" was:
It simply grew and grew.
Like any infant foot it would
No longer fit the shoe.

Besides, the shoe appeared to have
A tightening shoe-lace,
For Redpath's Alice J. did say:
"We really need that space!"

And furthermore did old George Moore,
Who four-score years had passed,
McGill let know the status-quo
Quite simply could not last.

Throughout the times of which I tell
Anomaly exists.
The "Lyman" insects were down-town;
The entomologists

Of McGill University
Were nearly all at "Mac"
(Macdonald College) sev'n leagues off -
And fourteen coming back.

(A well-known fact of geography
McGillians hold dear -
It's twice as far from Montreal
As it is there from here!)

Macdonald's entomologists,
Referring to their chores,
Thought that all insect requisites
Were in Department drawers,

But things changed when Keith Kevan came
In Nineteen-fifty-eight.
More int'rest in taxonomy
Began to generate.

Committee for Lyman's Bequest,
Macdonald's George Dion,
Changing financial circumstance,
Heirs Lyman, and so on,

In divers ways made possible
The move out to Ste-Anne.
But that did not occur at once;
'Twas Nineteen-sixty-one.

That year a great step forward came.
Real progress had been made.
A new curator was approved,
And, what's more, he was paid!

That worthy was Vern Vickery,
But one should not forget:
He, too, taught Entomology.
Curators do that yet!

"Lyman Museum" first was used
For this new enterprise.
The "Mac" collection added on
Had made it quite a size.

On the "Biology" third floor,
Vick wrestled with his task,
To make it international.
"What, all alone?" you ask?

At first, yes; but, after some years,
A Budget was acquired,
Abetted by Dean Stanley Frost.
Assistance could be hired:

Technical, secretarial,
And even summer aid.
A truck, a boat and cabinets
Were acquisitions made.

The Secretary, Nora Brown,
Served long, and so did "George"
Hsiung, whose fine artistry did links
Twixt Arts and Science forge.

The "Lyman" reputation grew.
It went from strength to strength;
Concerning the orthopteroids,
Led others by a length.

Name, too, expanded, status changed
In Nineteen-sev'nty-two.
A first Director now was named
And that was you-know-who.

But then occurred "developments"
Which for "Mac" hard did prove.
"The Lyman" was caught up in these.
Again it had to move.

That was in Nineteen-sev'nty-eight.
New quarters were all right,
Though history will show they weren't
Come by without a fight.

Funds from the University,
Decreasing all the while,
Pre-empted many benefits.
No longer could one smile.

The larger the collection grew,
The less the funds in size.
Eight years that passed proved not enough
All to reorganize.

And yet, before the task was done,
And much against the grain,
"Things happened" and the Museum,
Like Destry, road again!

With Vick and Keith both pastured out,
Replacements were required.
Mike Sanborne became Curator;
"Director" Jack acquired.

As to the rest, I'll do my best
To keep my verses clean.
I'll nothing say about the way
"Things happened" in between.

We have a new establishment.
It's of superior size.
It may not be all we deserve,
But not too bad a prize!

Before today, two floods, I say,
We had, and as I speak,
If you've looked round, you will have found
The ceiling's sprung a leak!

But we do trust things will adjust
And we shall settle down.
No Cinderella's tatters these -
Her second-hand ball-gown.

Perhaps, some day, a prince will come
With funding for more staff
And many things we need besides.
Did I hear Roger laugh?

Long life to Henry Lyman, then -
I mean his legacy -
All strength to us to keep his trust
For Entomology!

D. Keith McE. KEVAN (October 1989)

The Pleasures of Entomology

by Marie-Claude Larivière, PhD Student
Department of Entomology

People collecting insects are usually amateur entomologists or professionals who started as amateurs. They share an unending enthusiasm for field collecting, an undying thirst for more knowledge of the insect way of life, and eagerly await the discovery of new species.

Having started as an amateur entomologist 12 years ago, I often had occasion to ask myself why I chose entomology as my favorite pastime, what am I getting from it, and can my activity contribute to others. Now being a PhD student in insect systematics, that branch of entomology concerned with insect diversity, and having decided to make of my hobby my future career, these questions seem even more crucial.

Why collect insects? Well, simply because it's fun! It is collecting beautiful things, all shapes and colours, in all kinds of environments, at all seasons of the year. It is a healthy, inexpensive hobby, full of unexpected adventures and discoveries.

Entomologist-hobbyists are almost entirely systematists: they arrange their collections, and they identify and classify their insects. These activities are good constructive ways to spend long hours. They also develop patience and precision. For young people, entomology is an excellent hobby, a good use of time, and excellent exercise. For older people, it helps to keep the mind and body alert.

Collecting insects demands little material. One can do fairly well simply sweeping a net through the vegetation along a path in a field or a forest, simply carrying a few jars in which to put the catch. Supplies and instructions for mounting and preserving specimens can easily be obtained from natural history supply stores in most big cities.

Entomology as a hobby is, however, much more challenging than the mere placing of an insect in a bottle and later arranging it among other pretty specimens. Unlike many other scientist-hobbyists, for example bird-watchers, entomologists can bring home specimens, admire them at leisure for hours,

even years, and learn a great deal about animal diversity and survival by studying at close-range their colour pattern, morphology, and adaptations. Excellent introductory books and field-guides exist that permit the identification of insects. In Quebec a number of skilled amateurs have provided lists and hand-books to our insect fauna.

Entomology as a hobby is a dynamic activity in our province. An association of amateur entomologists (Association des Entomologistes Amateurs du Québec) has over 150 members. It is the largest association of this type in North America and brings together people from all walks of life, sharing the same passion for insects. Its members meet monthly, hold seminars, share skills and information, and organize field trips. Many undergraduate and graduate students from various universities belong to the association.

Much can be learned about the natural environment of our neighbourhood, our country, and even other countries of the world, by studying insects. Many species are indeed only found in association with certain plants or animals, or certain types of environments. Insect collecting also brings an interesting new dimension to travelling. I have been collecting insects for 12 years. More recently, I have concentrated my studies on one particular group of insects called "true bugs" or Heteroptera. My desire to make the life and habits of these insects better known and to discover new species has taken me to collect in hundreds of locations in the Atlantic Provinces, Quebec, Ontario, and over 35 states of the United States. Not only have I gathered thousands of specimens, but I have also learned a great deal about the natural settings, the fauna, and the flora of North America. Last summer, for example, I collected insects in Montana, Idaho, Washington, Oregon, and Utah, and the year before I was in Alabama, Texas, Wyoming, and Nebraska.

Insect collecting is a good way to introduce ourselves to ecology and other disciplines of modern biology, since many species have specific habits and ecological requirements. Insects form the largest and most diverse



Illustrations by Dr. George Hsiung.

group of living things on earth. Collecting them is never dull. Did you know that over 20,000 species of insects occur in Quebec? Studying creatures that evolved several hundred million years ago is fascinating and allows us to appreciate the power of nature and the processes of evolution.

Insect collectors can directly contribute to science by accumulating material to serve museums and scientists studying biodiversity. They can also add to the national heritage by eventually leaving specimens or entire collections to universities or government museums. The more specimens collected, the more species variation and evolution can be understood and the better the composition of our insect fauna can be evaluated. The presence of certain insect species is also indicative of environmental quality and their collection helps us appreciate our impact on the environment.

Insect collectors can also contribute to science by gathering information on the ecology (date and time, weather conditions, soil type, altitude under which insects occur), life history (the various stages of an insect, their appearance and habits), distribution, and behaviour (day and night activities, food gathering). Y.E.S. Quarterly (United States) and Fabriques (Quebec) are two well-known journals in which amateur entomologists publish their observations.

As you can see, collecting and studying insects can be a very thrilling and rewarding experience. As a hobby, the study of insects is a wonderful opportunity to get closer to nature, understand its make up and functions and, to some extent, contribute to science. As a discipline, entomology is taught in our colleges and universities: luckily for those, who like me, want to make of their every day passion their future career.

The Days of Beekeeping at Macdonald

by Dr. V.R. Vickery, Emeritus Curator
Lyman Entomological Museum

The 1970s and 1980s were the decades of the bees at Macdonald College. Students, particularly Diploma students, had requested classes in Beekeeping and as I had a background in honeybee and pollination research, it fell to my lot to teach these classes. The college had no bees and my apiaries were too far away to take classes for apiary demonstrations but very soon a few colonies were established. Almost as soon as classes in apiculture began, Degree students also asked for a course. So, we had the beginning of an apiary, a course in practical beekeeping for Diploma classes, and a more theoretical course for Degree students. In those days I had an observation hive in my office on the 3rd floor of the Biology Building. It was very popular with students and staff, and I must admit that often I spent considerable time in observing the bees when perhaps I should have been doing something else.

Then, in addition to the curriculum courses, I was requested by the Extension people to teach night classes. These classes were so popular that there was a waiting list as I could not reasonably demonstrate in the apiary to more than 40 students at a time. All of this was added to my regular duties in the Department of Entomology and in the Lyman Museum. These duties, in addition to the regular routines, included moving the entire museum from the Biology Building, that was taken

over by John Abbott College, to the new Macdonald-Stewart Building. I am not complaining - working with the bees made the other duties seem so much lighter.

During the early years, we had no equipment for handling honey, and I had to extract and pack the college honey at my home. Eventually I was given access to a room in the Pilot Plant and gradually acquired extracting and packing equipment, most of which was paid for by the sale of honey.

When construction of the Macdonald-Stewart Building began, I had to move the apiary to a site across the road from the Horticulture Building near the orchard. This site was terribly windy and eventually a cedar hedge was planted as a windbreak.

During this period, the beekeeping industry had been plagued by one problem after another. The "Africanized" bees were moving northward through South and Central America. I saw some of them in Venezuela in 1981. Early in the 1970s I was asked by a reporter when these bees would reach the United States. I had to think about that for a while but finally told him "About 1988." I was wrong. The strenuous efforts made to halt their progress did slow the advance somewhat, and now they are expected to reach Texas in 1990.

Another problem, Tracheal Mite, is a tiny creature that crawls into a bee's spiracles (breathing pores), multiplies inside the bee and shortens its life span. This is particularly hard on wintering colonies and many affected colonies do not survive until spring. This parasite became widespread in the United States before anyone realized it was present. Canada immediately set up a quarantine preventing entry of bees or any used equipment from any country except New Zealand and Australia. The supply of package bees from the south-

ern United States was completely cut off. Some mites have been found in Canada but infested colonies have been destroyed.

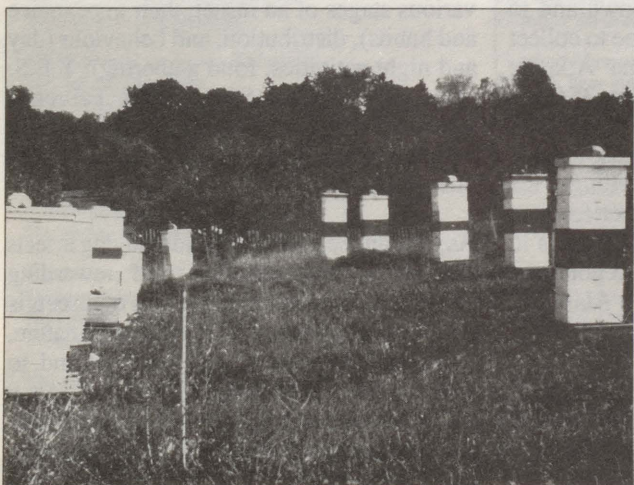
Still another mite, Varroa, also has found its way into the United States. Canadian beekeepers are on the alert. It is a very serious parasite. Extensive research is ongoing for control methods for these mites.

Since 1974, I have searched for ways to make Canadian beekeepers self-sufficient. The practice of killing the bees in the fall and restocking with "package bees" in the spring would have to cease. From that year on the college apiary produced significant numbers of spring-formed nucleus colonies that produced more honey than colonies started from imported package bees. A method of wintering bees outside was developed that gave better average survival than those that were wintered in buildings. A wintering method for very small colonies has led to significant production of late summer nucleus colonies. The success rate has been nearly perfect.

I was unable to escape the passage of time and in 1986 I was "officially" retired. I have had projects that required attention and have spent prolonged periods away from the campus. It was impossible to be here every time the bees needed attention.

The bees are gone now and the cedar hedge serves only to hide the dumping facilities. Some colonies became diseased so the bees were killed and burned. The apiary and the equipment in the apiary and for honey processing was sold.

At the very beginning of classes in apiculture, students asked me to write a book on bees as there was none available that covered the material I gave them. Retired people are supposed to have time for this sort of thing, though you can't prove it by me. I have been just as busy since 1986 as I was before, but, I have now completed the book. I think the many students (there were more than 1,500 of them) will find it is just what they asked for. The title is "The Honeybee, a Guide for Beekeepers." It will be available by Spring, 1990.



Part of the apiary Macdonald College had for teaching and research.

Hymenoptera as Biological Control Agents

by Professor P.M. Sanborne
Department of Entomology

The Hymenoptera is the largest insect order with an estimated 300,000 species worldwide. It comprises the sawflies, wasps, bees, and ants. About 80 per cent of the species are parasites of other insects and the majority of these belong to the superfamilies of Ichneumonoidea, Chalcidoidea, and Proctotrupoidea. The females of these wasps attack the immature stages (eggs, larvae, and pupae) and, rarely, adults of other insects by laying an egg in or on the body of the host which hatches and eventually destroys the insect.

Almost all terrestrial plants are eaten by one or more species of phytophagous (herbivorous) insect. Man's crops are no exception, and the large monocultures of these plants are particularly susceptible to the ravages of insect pests. With the spread of European civilization and culture during the eighteenth and nineteenth centuries, crops were transported from continent to continent with little regard for quarantine procedures. Phytophagous insects were often transported along with the crop and, freed from the pressures of natural parasites and predators, commonly assumed pest proportions resulting in enormous losses to growers annually.

Pesticide technology was in its infancy at this time and people began to consider importing the natural parasites and predators of pest species from their countries of origin in an attempt to control these insects. In 1888, a predatory beetle was successfully introduced

into the United States to control the cottony cushion scale and classical biological control had begun. In 1906 the first successful introduction of a parasite occurred when a chalcid was introduced into Italy from the United States to control the mulberry scale. From then until 1940, large numbers of introductions were made in the United States and elsewhere, resulting in a great increase in research on the biology of parasitic Hymenoptera. Much of the work done in this period was summarized in Clausen's "Entomophagous Insects" (1940), which has remained as the standard reference work on this subject. The work is currently being revised and updated.

From the 1940s onward the use of pesticides increased rapidly and biological control waned. During the 1960s there was a growing awareness of the health and environmental dangers of insecticides and interest in biological control again burgeoned. Studies have centred not only on classical biological control but on integrated control as well (the controlled use of pesticides augmented by natural enemies to effect pest control).

Spectacular successes, using Hymenoptera, have been achieved in these studies resulting in dramatic savings. In California braconid (Ichneumonoidea) and chalcid parasites used against orchard and agricultural pests saved growers an estimated \$250 million up to 1979.

Species of the most successful superfamily, the Chalcidoidea, have been widely used against a variety of crop pests, in particular, scale insects and whitefly (Homoptera). Recent developments in culture techniques enable mass rearings of adult parasites which can be released against target organisms. The chalcid *Dahlbominus fuscipennis*, a parasite of the Eastern spruce sawfly, has been reared in Canada and over 900 million individuals have been released to date. Chalcids have also been successfully released in greenhouses for the control of aphids, scale insects, mealybugs, and whitefly.

The next most widely exploited superfamily is the Ichneumonoidea. Many species of Braconidae have been used to control lepidopterous pests (moths). Species of Ichneumonidae have been most successful in forestry where they have been used against wood-boring sawflies (Siricidae). For example, the European ichneumonid, *Rhyssa persuasoria*, has been used successfully against *Sirex* which was introduced by accident in pine plantations in Tasmania.

Because of the important role that naturally occurring parasites play in pest control, considerable interest is being shown in ways of making agricultural habitats more attractive to these species. Measures adopted include providing alternative hosts at times when pest species are scarce, supplying pollen and nectar sources for adult parasites,

(turn to page 18)

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Biotechnology and its Relationship to Insect Control

by Professor Gary B. Dunphy
Department of Entomology

The present agricultural system, with its dependence on chemical insecticides, is undergoing strong pressures to reduce or eliminate the use of such insecticides. To address the warranted issues of environmental toxicity, insecticide resistance and secondary pest development, the commercial pesticide industry and agricultural researchers are examining new pesticide strategies, including the use of insect pathogens (viruses, bacteria, fungi, and nematodes), as microbial insecticides.

Microbial insecticides have numerous advantages. The most attractive, from an ecological point of view, being specificity of activity, restricting their impact on beneficial insects (predatory and parasitic insects that help regulate pest insect populations). Furthermore, these

insecticides leave no toxic residues. Many pathogens are capable of multiplication in the insect, amplifying the pathogen in the field, and contributing to an epizootic that brings the pest insect population back to levels non-injurious to the end users' financial objectives.

There are also substantial disadvantages to microbial insecticides, reducing both their practical effectiveness and commercial success. With the exception of fungi and nematodes, the pathogens must be ingested to be effective. Factors influencing insect feeding behaviour may reduce the level of consumed pathogen. Proper timing of the insecticide application also determines effectiveness, i.e., application prior to a major spurt in plant growth would result in large portions of the crop without protection.

The limited host activity spectrum is a major industrial disincentive. The inability of a given isolate of the pathogen to control numerous species of pest insects results in multiple applications of different microbial insecticides with concomitant economic constraints on the end user.

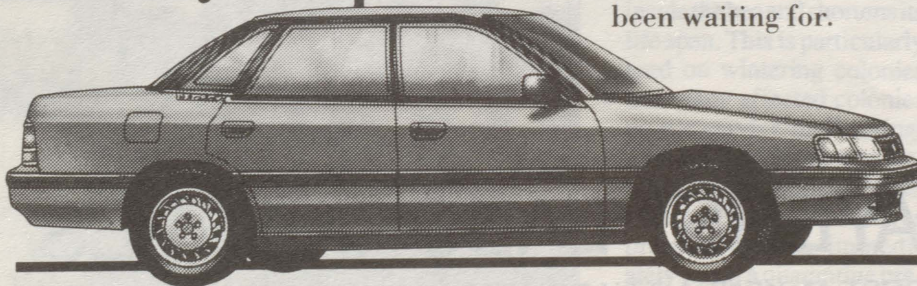
Potency, the culmination of storage conditions of the microbial insecticide, residual activity, and insecticide killing time, in conjunction with limiting field conditions, is generally less than conventional chemical insecticides. The manufacturing methods dictate the cost of the product in the *in vitro* production systems.

Many of these problems have been targeted for genetic engineering. The final result will be a new wave of microbial insecticides.

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Recent Advances In Insect Pest Control

by Professor W.N. Yule
Department of Entomology

Biological Control

Entomologists have just been celebrating the centenary of the importation of a ladybeetle, *Vedalia cardinalis*, from Australia to control the cottony cushion scale pest of citrus in California. This most successful case of biological control of an insect pest by introduction of an exotic predator (or parasite) into a pest's crop community has become known as the "classical" method of biocontrol and is still used today for insect and weed control.

However, in this day and age of pest management (rather than attempted eradication), breeding and releasing large numbers of predaceous and parasitic insects into pest-infested fields (inundation), or organizing agronomic practices, to boost the numbers and pest control effectiveness of indigenous parasites and predators (conservation) are being encouraged as more compatible for integration with some of the other methods of pest control that are described here. The reader is directed to Professor Dunphy's article for information on microbial control of insect pests.

Chemical Control

There is little recent progress to report in the field of toxic insecticides, except for the

introduction of several new synthetic pyrethroids, some of which now have a useful stability and effectiveness in soil, and others are still used for controlling resistant pest populations. Much exciting progress has been made, however, with non-toxic biochemicals, which, when fed or applied to pest insects, can alter their innate behavioural patterns or normal physiological processes.

Biochemicals, many of which have been extracted from plants and insects, can be used by farmers, foresters, exterminators, and homeowners to repel, attract, confuse, or arrest directional movement, mating, or feeding processes of pest populations, leading to a reduction in their numbers, density, reproductive capacity, and the damage they do. An example of a plant source of some of these biochemicals is the Neem tree, which grows in many tropical countries and is under intensive investigation. Chemists are also very busy trying to identify active biochemicals, synthesizing larger and cheaper supplies of analogues or mimics of them, and as noted below, devising formulations for their handling and dispersal.

Formulation and Application

Most of the above materials, microbial and chemical insecticides, have to be packaged

for storage, sale, distribution, and a variety of applications. They are formulated at this stage with a range of materials such as solvents, carriers, emulsifiers, wetters, stickers, baits, anti-oxidants, and ultra-violet barriers, to name but a few. Recent progress in formulation includes the development of slow-release resins and polymers, microencapsulation and liquid slurries, to increase effectiveness and range of market uses.

Progress in application includes the development of systemic farm animal treatments for insect parasite and fly control, tank mixes and direct incorporation into target substrates such as soil, to reduce handling and improve dosage accuracy, and spray distribution techniques such as ultra-low-volume application of concentrated liquids.

Integrated Pest Management

The integration of these modern "sophisticated" controls with more traditional cultural and physical methods for managing pest populations, and keeping the damage they cause to acceptable levels, is also making progress.

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Plum Curculio: The "Hunchback" of the Apple Orchard

by Professor Stuart B. Hill
Department of Entomology

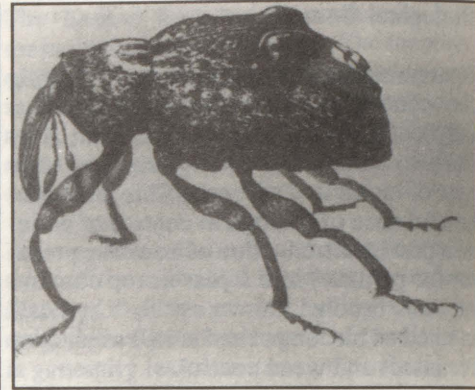
Quebec apple growers are all familiar with the plum curculio (PC) and with the moon-shaped, egg-laying scars it makes on their apples in spring and early summer, but few of them know what to do about it other than keep spraying pesticides. In fact, most pest control experts are in the same position. The reason is that this weevil is one of the most difficult insects to study, particularly because no technique has yet been discovered to trap and monitor it. My own association with it began in 1978 when Dr. Rudolph Paradis, the leading orchard pest researcher in Quebec at that time, suggested an investigation into methods of trapping and monitoring PC would be a suitable line of research for my new graduate student, Jean-Pierre LeBlanc. After investigating over a dozen techniques over the next four years we had to admit defeat. Actually, some techniques did work, such as attaching Granny Smith apples to the forks of major branches on trees adjacent to woodlots in spring, before apples appeared on the trees, and counting the number of egg-laying scars, but few growers would be likely to adopt such a technique.

We also found that funnel traps hung under the trees effectively collect PC as they fell in response to wind or changes in temperature or light, but once again this is hardly a convenient way to detect this insect's presence. In the process of studying this insect, however, we found out enough about its biology and ecology to suggest some more profitable lines of study. These centered around describing in detail the seasonal movements of PC, particularly its dispersal to overwintering quarters and return to the orchard. For this we had to label it with a radioactive isotope, release it into the environment, and track its movement with a scintillation counter (like a sophisticated Geiger counter). This work was done at the Frelighsburg experimental farm of the St-Jean-sur-Richelieu research station of Agriculture Canada in conjunction with Dr. Charles Vincent, and with Dr. Nyana Barthakur at Macdonald College. Gerald Lafleur was the first student involved and his studies started in 1981. As a result of a series of very successful experiments, we came to the following conclusions regarding the

behaviour of PC in the Frelighsburg orchard:

1. In fall, PC were found to be most active at night.
2. At this time PC tend to disperse in a southwesterly direction toward high tree silhouettes in the adjacent woodlot.
3. Where the vegetation and litter are unsuitable (e.g., coniferous), PC return to the orchard where 85 per cent or more of them may die during the winter. If the litter is thin, they either remain at the edge of the woodlot or return to the orchard. However, if the litter is suitable (e.g., a thick layer of maple leaves), they disperse into the woodlot and hide among the leaves where as many as three quarters of them may survive to return to the orchard the next spring.
4. In spring some return to the orchard. Most stop on the ground under the perimeter row of trees adjacent to the woodlot for up to three weeks before venturing into the trees. In this location they sometimes collect into small groups, probably for mating, and can be heard to make a faint chirping noise.
5. They tend to disperse first to early apple varieties that have the thickest foliage (e.g., Melba) also to plums and other stone and pome fruits that flower before apples.

Along the way other students joined the team. Laurie Shell did an undergraduate project on litter preference for overwintering PC, and Richard Blanchet did an undergraduate project on the method and timing of the dispersal in spring from the forest to the orchard. Gaetan Racette continued our studies on daily activity, and Gerald Chouinard the studies on dispersal behaviour. Jean-Pierre Brossard initiated some new studies testing nematodes as biological control agents. Again, all of these studies produced interesting findings that suggest approaches that can be taken to control PC. Based on our discoveries and those of other researchers, I would make the following suggestions with respect to the control of PC:



Plum Curculio "The Hunchback"

Orchard Establishment

1. Because of PC's preference for maple woodlots as overwintering sites and their low winter survival in other locations, it seems advisable to establish orchards as far removed as possible from maple woodlots. Furthermore, because PC also attack crabapple, wild apples, pears, plums, cherries, peach, apricot, quince, and hawthorn, apple orchards should be kept away from these trees, and wild host trees should be removed from the surrounding area.
2. Early apple varieties that have a lush, leafy foliage, such as Melba, are more attractive to PC and should be avoided or used as trap trees.
3. Trap trees, such as plums, can be used to give early warning of PC's presence as the characteristic egg-laying scars may be seen earlier on the small plums than on apples. In the absence of plums, inspecting small apples for egg-laying scars is, at present, the most reliable technique to detect the presence of PC.
4. A stone mulch about 1 foot radius around the tree trunk with a thick spoiled hay mulch out to the dripline is likely to encourage many predators of PC. Efficient mice guards must be used in conjunction with mulches.
5. A diverse array of ground vegetation with small flowers is likely to attract parasitic

wasps which may parasitize not only PC but also many other pests. This would need to be mown during apple blossom to avoid attracting the bees away from the apple pollination. Bare soil in the orchard is probably also unattractive to PC, but its dependence on heavy herbicide use and associated soil erosion makes it an unsuitable solution.

6. Sites adjacent to maple woodlots could be made less attractive by planting one or two rows of conifers along the edge to discourage PC from entering the woodlot in the fall. Coniferous leaf litter scattered along the woodlot edge might also repel the PC.

7. Alternatively, isolated groups of suitable trees could be located along the edge of the woodlot and the PC that congregate under them be controlled by physical, chemical, or biological means.

Control in Established Orchards

8. Ground-feeding birds (chickens, quail, peacocks, or wild birds) could be caged or attracted to the area under the perimeter rows

of trees adjacent to a woodlot in the spring (throughout May in southwestern Quebec). An easy way to do this is to have several mobile chicken houses that can be moved along the edge of the orchard. Incidentally, all successful organic orchards that I have ever visited had several hundred chickens in them as pest control agents.

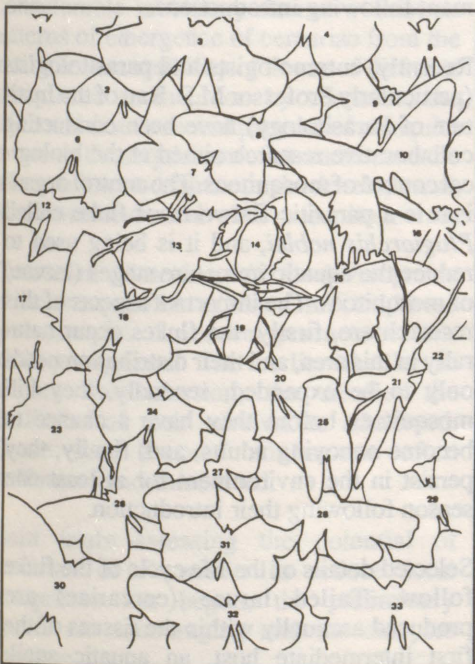
9. Removal of June drop apples can considerably reduce PC damage, particularly if it can be done soon after the apples fall and before the grubs have a chance to move into the soil to pupate. This can be done with a machine (similar to ones some golf clubs use to vacuum up golf balls), or with animals (possibly geese, pigs, or sheep). Ducks in an orchard will also eat some pests as will certain insectivorous birds, which can be encouraged by placing appropriate-size bird boxes on stakes or dead trees. Flickers, for example, may pick PC out of the bark of trees.

10. Biological controls are not yet commercially available, although our research indicates that several species of nematodes may be useful. These should be

sprayed on the ground under the perimeter rows of trees in spring, under the trees at June drop, and under the tall trees or all the trees at the edge of any adjacent woodlots in the fall. It may be possible to apply suitable bacteria, fungi, or viruses in the same way as these materials insecticides (imidan, zolone, Guthion) may be used in the same way or applied to the perimeter rows of trees at the usual time of spraying for PC (at 90 per cent petal fall and, if needed, 8 to 10 days later). A PC become active at dusk at this time of year spraying should be carried out because susceptibility to pesticides increases with activity.

Although I would like to tell you that this work is progressing and that reliable, safe and economic controls are around the corner I have to report that for the past two years I have received no research funding to continue this work. By letting those who give our research money know what you would like to have investigated, you, the grower, can play an important role in ensuring that you have answers to your problems.

Cover Identification



1. *Cymothoe Sangaris* Godart, Africa: Sierra Leone to Nigeria
2. *Colias Casonia*, North America
3. Giant silkworm moth, Africa
4. *Euthalia dirtea*, Italy
5. *Euripus nyctelius*, W. Malaysia
6. *Cyrestis achotes*, Asia
7. *Danaus plexippus*, Monarch butterfly, Danaidae, N. America
8. *Janonia coenia*, Buckeye, North America
9. *Papilio multicaudata*, Two tailed swallow-tail, From B.C. to California eastward to western Texas & Montana
10. *Urania ripheus*, Day time moth, Tropical regions South America
11. *Heterorrhina dohrni* Lansb., Scarabaeidae beetle, Oriental
12. *Hyalophora cecropia*, Cecropic moth, Saturniidae, N. America
13. *Dynastes tityus* (L.), Unicorn beetle, Scarabaeidae, N.A.: South, Central & S.E. United States
14. *Stephanorrhina guttata* (O.), Scarabaeidae beetle, Africa - Ethiopia
15. *Harimala palinurus*, Exquisite banded swallowtail, Oriental regions
16. *Titanacris albipes* (Deg.), Locust, Surinam
17. *Morpho* sp., South America
18. *Kullima paralekta*, Asia
19. *Acrocinnus longimanus*, Harlequin Beetle, Cerambycidae - S.A.
20. *Chilasa paradoxa*, Asia
21. *Megacranila tsudai*, Shiraki stick insect, Taiwan, N. Australia
22. *Pachysphinx modesta*, Big poplar sphinx, N. America
23. *Pacnota Cordata*, Scarabaeidae, Africa — Posters and cards featuring this drawing by Dr. George Hsiung, Curatorial Associate, Lyman Museum, may be purchased from the museum.
24. *Precis hierta*, Africa
25. *Tibicen canicularis* Harr., Quebec
26. *Speyeria* sp., Fritillary, N. America
27. Arctiidae moth, S. America
28. *Grammia virgo*, Tiger moth, Arctiidae, N. America
29. *Salamis casta casta*, Fabricius, Africa: Sierra Leone to Angola & Zaire, Uganda, W. Kenya & Ethiopia.
30. *Thoria aliris*, Oriental
31. *Diaethria metiscus*, Brassididae, S. America
32. *Bematistes consanquinea*, Africa: Nigeria to Gabon, S. America
33. *Smyrna blomfieldia*, South America.

Mosquitoes: Recent Research on Repulsion and Control

by Professor David J. Lewis
Department of Entomology

Mosquitoes occur throughout Canada, from Newfoundland to Vancouver Island and from the Arctic to the United States border. They may be annoying both day and night from early spring until late summer or early fall, and are the only biting flies in Canada that transmit disease organism (arboviruses responsible for the various encephalitides) to humans.

There are 74 species of mosquitoes in Canada and about 40 of these occur in Quebec. Some of the mosquitoes have fascinating scientific names. For example, is *Aedes excrucians* named for its excruciating bite, do females of *Mansonia perturbans* really have a perturbing attacking behaviour, is *Anopheles earlei* really one of the earliest mosquitoes to seek a blood meal in the spring, do the immature stages (larvae) of *Aedes communis* characteristically aggregate in dense masses, and does *Aedes canadensis* really occur completely across this mosquito-infested land?

Ultrasonic Repellers

In recent years a number of electronic/ultrasonic mosquito repellers have been available to consumers. Most of these are small, cylindrical, battery-operated devices which usually sell for \$12-\$16. Manufacturers claim that the sound produced (barely audible to the human ear) imitates a male mosquito and supposedly repels a blood-sucking female because she has already mated. Effective protection distance is claimed to be about 3 metres.

Three different electronic mosquito repellers



an electronic mosquito repeller.

have been tested by entomologists at Macdonald College. One test (and the first) was performed at the request of a potential importer of such devices; the other two were at the request of Consumer and Corporate Affairs Canada. In the case of the latter, it appears that consumers using these devices were not obtaining the advertised protection.

Two of the repellers were tested in the laboratory and all three were tested under field conditions. Without providing details of the actual experimental procedures, the tests were designed to account for variation in repellers, individual human attractiveness, sampling sites, atmospheric conditions, and the blood-sucking patterns of different species of mosquitoes. For each of the three different repellers, human subjects using the repellers had from 4.4-7.9 percent more bites than those without the device! Consumers beware! Keep your money in your pocket or purse and leave the repeller on the store shelf! One can readily appreciate the consequences of travelling to malarial regions expecting to repel blood-seeking mosquitoes with electronic repellers. On a more positive note, I have an electronic repeller (without a battery) in my office, and I haven't seen any mosquitoes at all!



Evaluation of an electronic mosquito repeller in the Morgan Arboretum.



Paul Maloney, Martha Farkas, and Wayne Fairchild: unwilling blood-donors for the field test of an electronic mosquito repeller.

Biological Control

Biological control (the control of one organism by use of another) of mosquitoes has not been nearly as successful as we would like it to be. This is due, at least in part, to the high reproductive potential of mosquitoes, their relatively short generation time, and their ability to rebound very quickly from population reduction. Many conventional biological control agents have long generation times and do not persist or remain in the environment following introduction.

Recently, entomologists and parasitologists (particularly Professor M.E. Rau of the Institute of Parasitology) have been conducting collaborative research aimed at the biological control of mosquitoes. The control organism is a parasitic flatworm or fluke called *Plagiorchis noblei*, and it is being used to reduce the aquatic immature stages (larvae) of mosquitoes. The important aspects of this research are, firstly, the flukes occur naturally in this area, and their distribution needs only to be expanded, secondly, they kill mosquitoes before they have a chance to become annoying adults, and, finally, they persist in the environment for at least one season following their introduction.

Selected details of the life cycle of the fluke follow. Tailed larvae (cercariae) are produced asexually within the tissues of the first intermediate host, an aquatic snail;

thousands of cercariae may emerge daily from the snail. The cercariae swim around for a short time and then penetrate the second intermediate host, the aquatic immature stages of a variety of insects. Here, they encyst within the tissues and transform into metacercariae. When infected insects are eaten by birds or small mammals (the definitive host), metacercariae are digested out of their cysts and develop into adult worms in the small intestine. Adult worms mate and subsequently produce eggs which are passed with the faeces. If an egg is ingested by a suitable aquatic snail, it hatches into a miracidium which penetrates through the gut wall into the tissues where it transforms into a mother sporocyst. Each mother sporocyst produces numerous daughter sporocysts asexually, and each of the daughter sporocysts continually produce large numbers of cercariae for more than a year. This completes the cycle.

Research in the laboratory and the field has examined aspects of the biology of the snails, larval mosquitoes and flukes as the initial step towards assessing their suitability as biological control agents of mosquitoes.

Considerable laboratory data now exist on patterns of emergence of cercariae from the snail, the susceptibility of larvae of different mosquitoes to infection by cercariae, the effects of distributional patterns of mosquito larvae on the acquisition of cercariae, and the effects of metacercariae on the development, behaviour, and survival of mosquito larvae.

The cercariae interfere with the development of the mosquito larva. Many infected larvae never complete their development to become adult mosquitoes. The earlier the larvae acquire the infection, the smaller the likelihood of their survival to adulthood. Those that become adults are often malformed and short-lived.

Field trials assessing the potential of cercariae of *P. noblei* to reduce local mosquitoes has begun; the preliminary results are encouraging and the analyses continue.

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Lyme Disease: What is the Situation in Quebec?

by Adriana Costero, PhD Student
Department of Entomology

Lyme disease has been recognized in the United States as the most important vector-borne disease of the 1980s. Between 1982 and 1988, 13,825 cases of this disease were reported from 43 states. Lyme disease is a multisystem disorder that affects the skin, cardiac and neural systems and develops into arthritis. It is not a fatal disease, and it can successfully be treated with antibiotics if detected in time.

In Canada, *Ixodes dammini* has been confirmed to exist in Manitoba, Ontario, Prince Edward Island and, recently, in Quebec. However, except for Long Point (Ontario), very few specimens have been recovered, which makes us believe that the populations of this tick are very small. Also, the number of cases of Lyme disease acquired in Canada are very few. Between 1977 and May 1989, 25 out of 30 cases are thought to have been acquired in this country. In Quebec, only two suspected cases have been reported: one in Chicoutimi and one in the Beauce; these cases were not confirmed.

The agent responsible for this illness is a bacteria, *Borrelia burgdorferi*, which is transmitted to man and animals in the north-eastern U.S. by the deer tick, *Ixodes dammini*. Not all ticks are infected with the bacteria; however, those that are will transmit it to their hosts while feeding, approximately 12-24 hours after attaching. In humans, the initial symptoms of Lyme disease include: a rash around the tick bite 3-30 days after being bitten, fatigue, headaches, stiff neck, and stiff joints. These symptoms could, however, also correspond to other illnesses, such as flu or an allergic reaction to an insect bite. It is difficult to diagnose Lyme disease. If you have been to the northeastern U.S. or Long Point, Ontario, and you suffer from these symptoms, it would be advisable to see a doctor.

The deer tick resembles a brown sesame



Deer tick, *Ixodes dammini*

seed. It has a two-year life cycle, which begins in the spring when the larvae emerge. These tiny creatures prefer to feed on the white-footed mouse (*Peromyscus leucopus*), from which they acquire the bacteria. After feeding during the summer, the larvae become dormant during the fall and winter. The following spring, they moult into nymphs. Those that emerge from infected larvae will already be infected. The nymphs will feed on a wide variety of hosts: mice, dogs, man, birds, etc. While feeding, they will transmit the bacteria to their host. The nymph stage is the stage that is the most implicated in the transmission of Lyme disease to man. They are active all summer, the same season when most people spend a lot of time outdoors. In the fall, they moult into adults. Males and females prefer the white-tailed deer, *Odocoileus virginianus* as a host. They mate on this mammal, and the males die soon afterward. The females engorge, and in the early winter they detach and become dormant until the spring, when they lay their eggs,

completing the cycle.

Taking this into consideration, it is very improbable that a person or animal will acquire the deer tick during the late fall or during winter. If you find a tick on yourself or pets, grab it as close to the skin as possible with a pair of tweezers or protected fingernails and pull gently but firmly. Place the tick in a small plastic vial with alcohol (if you do not have a vial you can stick it to the sticky side of masking tape) and mail to Adriana Costero, Department of Entomology, Macdonald College, 21,111 Lakeshore Road, Ste. Anne de Bellevue, P.Q., H9X 1C0 for it to be identified. Please include your name and address, and tell us where the tick was found.

Although the situation in the U.S. is alarming, there is no reason for Quebecers to feel threatened by this disease. Unfortunately, the media in the U.S. have created a scare

situation in television programs and journal and newspaper articles. There is no evidence as yet that points to the presence of this disease in Quebec. However, if you spend a lot of time in the woods or fields in the spring and summer (when ticks are most active), or you are in close contact with wild animals that could host the tick, it is advisable to take the following precautions: walk on trails (ticks are usually in the bushes or tall grasses), wear long pants and long-sleeved shirts, and wear light-coloured clothes to spot ticks easily, use tick repellent if you spend a lot of time in the woods, and most important of all, check yourself, children, and pets for ticks after a walk. Ticks need to be attached to their host between 12-24 hours before they can transmit the bacteria.

Prevention of a disease can only be accomplished through awareness and knowledge. If you have any questions regarding ticks or Lyme disease, please write to me here at Macdonald College.

Mac International

Doing Entomology Overseas

by Professor Stuart B. Hill
Department of Entomology

Six of my graduate students are working outside of Canada, four of them in third world countries. Hélène Chiasson has conducted a three-year study in the Republic of Guinée on key factors influencing the population dynamics of the stalk eyed flies *Diopsis longicornis* and *D. apicalis*, stem borers of rice. Intensification of rice production in Guinée is a priority of the government. Stalk eyed flies are listed by the Food and Agriculture Organization as important pests and little is known about their biology and economic importance in Guinée. Hélène worked with farmers following traditional rice production practices in a rural area 50 km from the capital of Conakry. She trained two technicians, supervised three student projects, and designed and taught courses in General Entomology, Medical Entomology, and Agricultural Entomology in the Department of Zoology at the University of Conakry. Hélène's research was supported by an International Development Research Centre (IDRC) grant, and she was co-supervised by Dr. Gerald Lafleur, a past student of Dr. Hill's who, until recently, was working in Burkina Faso.

Julien Passerini has recently returned from spending two seasons in Mali where he has been studying the effectiveness of a locally available pesticide from the Neem tree on the pest complex of millet. Simple formulations made by the farmers proved to be effective against grasshoppers and stem borers. Because of the frequent drought in Sahelian countries, it is essential that the crops produced during wet seasons not be lost to insects. Purchased insecticides are out of the range of most farmers who annually have less than the equivalent of \$8 to spend on control measures for each hectare of crops. Neem provides at least a short-term solution to this problem. Julien's work has been supported by a Canadian International Development Agency (CIDA) grant.

Alexander Yaku, who is from Irian Jaya, Indonesia, is conducting studies in his homeland on the effects of intercropping on the amount of damage done by the sweet potato weevil. As sweet potato is the main

food crop used by Irian Jayans and because the government has initiated a policy of minimal pesticide use, it is essential that effective cultural methods of pest control be developed. Alexander has been supported by CIDA via the project that is co-ordinated by the School for Resource and Environmental Studies at Dalhousie University.

Richard MacLean has recently returned from the Philippines where he has been working with local farmers to develop and evaluate the effects of alley cropping on the productivity of rice, on weeds, pest and beneficial organisms. His work will help to lay the foundation for the ongoing transition from overspecialized systems of production to those that are more diversified and, in some cases, eventually to multistory, polyculture designs. Richard is co-supervised by Professor A. Watson in the Department of Plant Science, and his research has been supported by CIDA and IDRC funding.

These studies contribute to the solving of world food problems, and provide a rich experience for the students concerned. ■

The Orthopterist's Society "Field Guides"

by Dr. V.R. Vickery, Emeritus Curator
Lyman Entomological Museum

The Orthopterists' Society is a world-wide organization devoted to research and extension on locusts or pest species of grasshoppers. In cooperation with the Food and Agriculture Organization (FAO), Rome, a program has been established that will bring people from disadvantaged countries to North America for training in Canada and the United States.

The Society also is preparing a series of extension Field Guides for free distribution in areas where they will be useful. The project will cover the entire world. Each part is being written by the person most

knowledgeable in the particular area. Together with an introduction, there are three series, the first on general topics that are relevant everywhere; the second on individual locust species; and the third on the pest species of a region (except for the major pests covered in the second series).

I was honoured by the Society in being elected president for the period 1985 - 1989. Both projects were begun during my term of office, and I agreed to co-ordinate, edit, and publish the Field Guide series. I have contacted co-workers all over the world. The response has been very good and about a third of the manuscripts have been received.

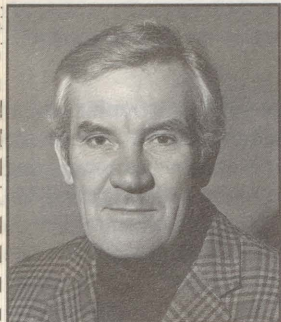
The most serious problem was to find funds for publication. Now, at last, the funds are at hand; the Canadian International Development Agency (CIDA) has given me a contract and the sum of \$45,000 in order to complete the preparation and printing of the Field Guides. None of the contributors or myself will be paid for any of our efforts; this is our contribution to assist in the prevention of famine in the world, at least in so far as losses from these pests are concerned.

The Field Guides will be published in the language most appropriate for the region. Papers on Latin American species will be published in Spanish, those on species in the French-speaking parts of Africa will be in French. In some cases it will be necessary to publish in both French and English. If funds allow, we would like to have the papers in Spanish and French also published in English. I have had to limit the languages to three. It is unfortunate perhaps that the Guides covering China and the U.S.S.R. will be published only in English. I estimate that the Field Guide project will be completed very early in 1993.

I will also be involved in the training sessions which will be held in 1990, and probably also in subsequent years, in either Bozeman, Montana, or Saskatoon, Saskatchewan.

Seeking Solutions

Population Dynamics of Insects



by Dr. R.K. Stewart
Associate Dean, Research

My instructions from the Editor for this issue are to blow my own trumpet and tell you a little about my own research.

For more than 20 years now in Canada, my students and I have been interested in the population dynamics of insects. That means that we want to see what makes them tick ecologically and find out the factors that make their numbers go up and down the way they do. We have also asked ourselves such questions as: where do the flies go in the wintertime? (House flies, by the way, overwinter as adults hiding in nooks and crannies wherever they can find good shelter.) Over the years we have been concentrating on a number of insect pests with the idea that, if we find out the factors that determine whether they are in large numbers or small numbers, we can use the information to manipulate the populations so as to make them less of a problem for us. For example, some years ago we worked on the Gypsy Moth. It was coming into Quebec at the time and the question was, would it be able to withstand our notorious Quebec winters? The Gypsy Moth overwinters as eggs which are laid in masses on the trunks of trees and similar habitats above and below snow levels, and we found out that the eggs of the Gypsy Moth are quite capable of withstanding most of our winter conditions and, indeed, the animal has established itself well north of Montreal. We found out which parasites and predators were attacking it and, again, we found that this nuisance to our hardwoods had no real detriment to increasing its numbers in Quebec.

Quite recently we completed a piece of work on an animal called the Picnic Beetle. This is a small beetle which no doubt you have met when dining out of doors and having a glass of wine with your meal. This is the little nuisance which insists on committing harakiri in your wine glass. It does this because it is attracted to fermenting material and thus

its attraction to damaged crop plants. This beetle is quite a problem in fruit-growing areas and will also attack corn plants. One of my ingenious students developed a trap for this animal using a banana wrapped up in newspaper. We were using the traps not as a control method but as a monitoring technique to get an estimate of the population density in the area. But I thought it was a nice little touch.

For a long time we have been working on the Tarnished Plant Bug, a true bug sucking the juices of a wide range of crop plants and making a general nuisance of itself. This is the first pest for which our group tried to develop what are called Economic Thresholds. The Economic Threshold is that level of the insect pest at which the pest manager determines he would have to step in and apply control methods. These control methods could be chemical, biological, cultural, or whatever. The Economic Threshold is an important tool of the Integrated Crop Protection worker. The problem with the concept is that you have to determine the Economic Threshold for each insect, each area, and each crop. It does, however, reduce substantially the need to use chemical pesticides when used in an Integrated Pest Management program. This bug is a notoriously difficult animal to control because it is extremely mobile and moves from crop to crop with great facility. One of my more recent students did some very nice work on it, where he demonstrated that there were a number of parasites of the egg of the Tarnished Plant Bug which could potentially be biological controls if properly promoted. We hope to continue with this work in the future.

Currently we are very interested in looking at two crops: carrots and onions. In the carrot system we are looking at the two major insect pests: the carrot weevil and the carrot rust fly and are trying to develop a control strategy for these which would integrate into a carrot management system that would be suitable for Quebec. In this work we are in close co-operation with Dr. Guy Boivin of the St. Jean Agriculture Canada Research

Station, and an Auxiliary Professor in the Department of Entomology. We are attempting to integrate with his work and possible biological control of the carrot weevil. In onions we are looking particularly at a little beast called the onion thrips. This is a very tiny fringe-winged insect which sucks the plant juices and causes considerable damage to onions. Our thrust here is in the development of Economic Thresholds and the development of efficient monitoring techniques to allow improvement of integrated control approaches.

Looking at this survey of my work, I appear to be a little bit of a dilettante in that I have jumped from looking at one insect to another. There is, however, a common thread. We are looking at the population dynamics, control mechanisms, and general ecology of insect pests with the idea that we will be able to apply our knowledge to the control of these pests.

(continued from page 9)

Hymenoptera as Biological Control Agents

and planting or protecting natural hedges around agricultural areas to provide refuge during the winter.

It has been shown that successes with biological control far outweigh those achieved with pesticides. More than six per cent of natural enemies introduced effectively control pests compared to the success of one chemical in every thousand tested.

An area of research with enormous potential is the control of medically important arthropod vectors of human disease. For example, in eastern North America the tick *Ixodes dammini*, a vector of Lyme disease and human babesiosis, is parasitized by *Hunterellus hookeri*, an encyrtid wasp. Not only does this parasite destroy large number of ticks, but it has also been shown that parasitized ticks are less likely to carry diseases.

Notable Events

Bucks for Pups

Seldom will the spirit of the graduates of Clan Macdonald — and their friends — be more evident than it was last September 30th when 400 people gathered in the Centennial Centre at Macdonald College for an evening of fun, fellowship, music, and entertainment - all for a good cause. The occasion: the sixth Bucks for Pups benefit concert in aid of Guiding Eyes for the Blind.

Master of Ceremonies for the evening, Martin Silverstone, BSc(Agr)'77, said that the original Bucks for Pups get together took place at his home. "It outgrew my place and we decided to come to the Centennial Centre," Martin said. "The new location is especially appropriate as Jim Bergeron, one of the top fundraisers for Guiding Eyes is a Mac grad, BSc(Agr)'74." ("Tackling Blindness One Small Step at a Time," The Macdonald Journal, August 1985.)

This concert, which Martin hopes will become a semi-annual event (next one is being planned for April) grew out of a commitment that the Ste-Anne-de-Bellevue Rugby club made in 1982 to raise money for Guiding Eyes for the Blind, a school in Yorkton Heights, New York. This was the school at which Jim Bergeron, a member and former player of the Ste-Anne's club received a guide dog, Hickory, in 1980 and then returned to the school to train with a second dog when Hickory succumbed to cancer. Many graduates from Yorkton Heights help raise money for the school, and the rugby club, along with a great deal of help from the West Island area, has helped Jim to become one of the top fundraisers in past years.

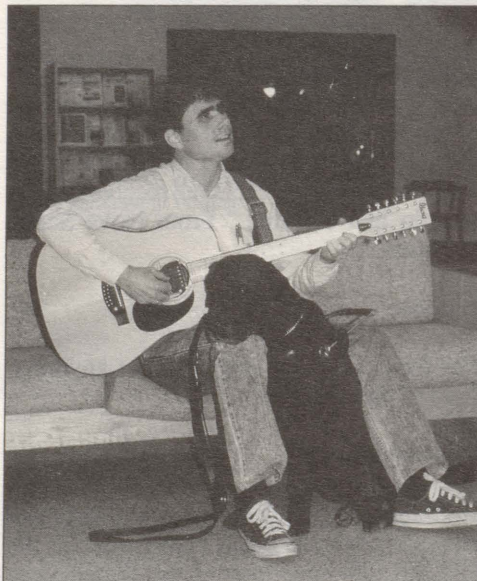


Mike Bleho, Dip'81, 3rd from left, part of the group — Bill Gossage on bass, Bill Brodie on banjo, and Yoko on guitar — play for an appreciative audience.

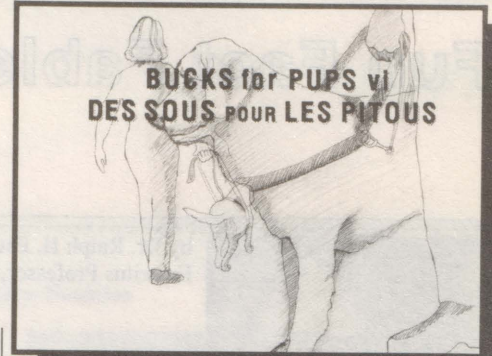
There are many guide dog schools in North America but Guiding Eyes is special because of its accent on mobility for the blind. The school has an excellent reputation for the quality of its dogs and is world renowned for its innovative approach and high level of student participation on its board. It is also special in its readiness to accept multi-handicapped students - such as those who are blind and deaf - something many other schools are not equipped to do.

The concert in September and the ones held in the past have attracted some fine folk and blues musicians: among them, Ian Grey, Mike Bleho, Bill Gossage, Gary Townsend. In addition five Montreal area artists: Elizabeth Skelly, Debbie Gilmour, Kate Devolpi, Susan Valyi, Odille Tetu, Art Taylor, and David Denbeigh donated original works which were auctioned before the music began along with some numbered wildlife prints which had also been donated. Profits for the evening came to \$3,000. All those who contributed to the evening should be pleased with the results.

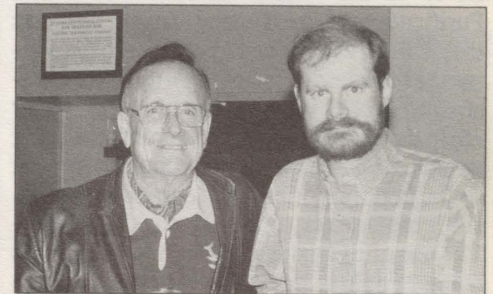
Great cause. Great response. Great party. We look forward to Bucks for Pups VII.



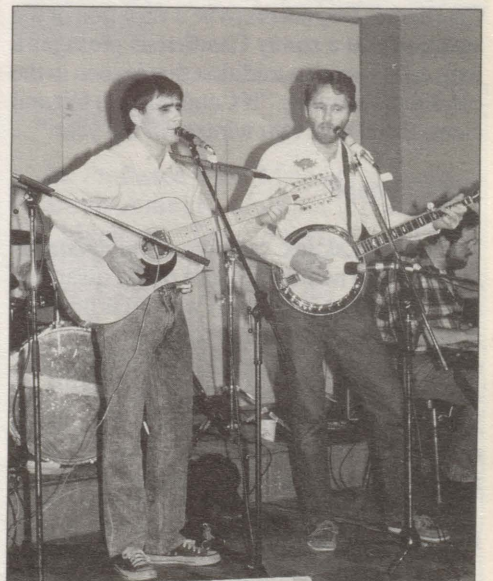
Getting in tune: Jim Bergeron and a very relaxed Snoopy prepare to entertain the guests.



Among the organizers of the Bucks for Pups benefit concert were Mac grads, l to r, Robert Baker,'81,'83, Serge Blondeau,'77, Martin Silverstone,'77, Jim Bergeron,'74, and Bill Brodie,'77. Seated, Jack Domaradzki,'76.

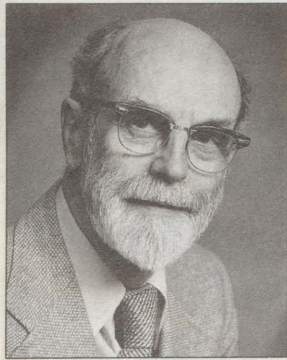


Dr. Bruce Baker and Bill O'Neil, BSc(Agr)'78, MSc(Agr)'84, two of the many who enjoyed the evening.



Jim Bergeron and Bill Brodie and their group started the evening's entertainment off in fine style.

Fun Fact Fable Fiction



by Dr. Ralph H. Estey
Emeritus Professor, Department of Plant Science

Candlemas Day

A Christian festival celebrated on February 2nd each year commemorates the presentation of Jesus to the Temple, and in the Greek Church is referred to as "The Meeting of the Lord." In the West it commemorates "The Purification of the Blessed Virgin" because the Church says it is 40 days after the presumed birthdate of Jesus, even though February 2nd is only the 39th day after December 25. In the Roman Catholic Church, beginning around the eleventh century, candles blessed by the Pope or a priest were carried in procession before Mass, thus the name Candlemas. The use of lighted candles symbolizes Jesus being "a light to lighten the Gentiles, and the glory of thy people Israel." (Luke 2:32).

The association of ground-hog day with Candlemas Day seems to be a variation of the tradition that a sunny Candlemas presages a long cold spring; a tradition that is seen in the old Scottish saying: "If Candlemas is fair and clear, there'll be two winters in the year."

Hot Cabbage

The eastern skunk cabbage (*Symplocarpus foetidus*), so named because of the disagreeable odour that is released when it is bruised, is among the first plants to come out of the earth in the spring. It can do this because of its ability to melt its way through the frosty soil. It is able to produce heat and to maintain a remarkably uniform temperature of 20 - 22°C inside its folded flower structure.

Linguistic Humour

Conductor: Your fare miss.
Miss: Do you really think so?

Hot Costume

There was a young girl from St. Paul
who wore a newspaper dress to a ball.

But her dress caught on fire
and burned her entire
front page, sporting section, and all.

Bon Accord

There are several districts and communities
in Canada named Bon Accord, which is the
motto of the city of Aberdeen, Scotland.

Changes Have Occurred

The first elected legislative body in British
North America met for the first time on
October 2, 1758, in Halifax, the capital of
Acadia. The members of that General As-
sembly gave their services without fees.

Beans for Lunch?

When driving through a small town in Nova
Scotia, this sign was seen:

STOP
For Lunch
GET GAS

A Military Message

General Fox to Sir Guy Carleton, Halifax, 15
Aug. 1783: "...I have ordered the allowance
of rum to working parties to be reduced to a
gill per man, and I have directed that the
Commissioned Officers shall receive spruce-
beer in lieu of rum..." From Nova Scotia
Archives.

Blooper

For Sale: Labrador dog, will eat anything,
fond of children.

True or False?

In commenting on the 11 new nuclear power
stations currently being constructed in the
U.S.S.R., the chairman of the Soviet State
Committee for Nuclear Energy is quoted as
having said that under normal conditions a

nuclear power station pollutes the environ-
ment 10 times less than a thermal power
station of the same generating capacity, be-
cause coal contains a radioactive isotope of
carbon that is carried into the atmosphere
with smoke.

Student Answer

Queen Victoria was the longest Queen on the
throne.

Botanical

The winter buds of woody plants can survive
through the coldest winter temperatures
coupled with frequent thawing, but as soon as
they unfold they may be killed by a slight
night frost.

Calendar Logic

According to the Gregorian Calendar, the
one we currently use, every year has 53 of the
day it begins on. If the year begins on a
Sunday there will be 53 Sundays, etc.

Air Travel

The first non-stop flight across the Atlantic
Ocean was made by John Alcock and Arthur
Whitten-Brown, in a twin engine Vickers
Vimy biplane. They flew from St. Johns,
Newfoundland, to a peat bog near Clifden,
Ireland, June 14, 1919. In doing so they won
the \$50 000 prize that Lord Northcliffe had
been offering to anyone who could accom-
plish such a feat. Eight years later, Charles A.
Lindbergh flew from New York to Paris and
the New York Times paid him \$250 000 for
his story. In addition he was awarded at least
six medals, and then made another fortune
from a book that he wrote about his exploits
in the air.

Most North American adults know about
Lindbergh's flight, often incorrectly referred
to as the first non-stop flight across the Atlan-
tic, but relatively few know the story of the
real pioneers in successful trans-Atlantic
flight, the two British fliers, Alcock and
Brown.

Campus Life

Recognizing Excellence



by Linda Jacobs Starkey, University Coordinator
Professional Practice (Stage) in Dietetics, School of Dietetics and Human Nutrition

Each spring, when grades have been calculated and the campus quiets as the summer comes around, the Faculty Schol-

arships Committee meet to finalize selection of recipients for scholarships, awards, prizes, and bursaries. Based on the academic year just past, these honours are conferred each year either in June, for convocating students, or early in November for returning students. Recommendations to the Committee come from academic advisors, the students' society, athletics, and departmental subcommittees. But it is not really the Scholarships Committee that is recognizing excellence of students' efforts — it is the donors of the awards! These individuals, companies and organizations invest in both the present and future of Mac grads! A sampling of new and continuing gifts in 1989-90 is shown in the photos on this page.

New awards are so welcome! In addition to those few pictured here, we express thanks for THE DONALD McQUEEN SHAVER FELLOWSHIP for a postgraduate student with research related to the well being of domestic livestock and birds; THE SANDRA LETENDRE MEMORIAL AWARD for a student studying in wildlife resources; THE VON HOYNINGEN HUENE SCHOLARSHIP in agricultural engineering; THE MACDONALD CLASS OF '44 GRADUATE STUDENT BURSARY, the new LEWIS A. FISCHER award and bursary in Agricultural Economics, and all other donations which we hope to recognize in upcoming articles.

Should you wish to participate in recognizing excellence of students at Macdonald College, please contact Linda Jacobs Starkey, Chairman, Scholarships Committee. Your donation may contribute to the endowment fund of an existing award or bursary, or you may wish to fully sponsor a prize!



Lara Drummond Scholarships: in the name of his daughter, Lara, former Quebec Minister of Agriculture, Mr. Kevin Drummond, represents the Lara Drummond Foundation and contributes annually up to \$18,000 towards scholarships at Macdonald College. France Girard receives a \$2,000 cheque from Mr. Kevin Drummond, her renewal of the prestigious Lara Drummond Scholarship. France is studying in the Dietetics Major in the School of Dietetics and Human Nutrition.



The Canadian Agricultural Economics and Farm Management Society (CAEFMS) Book Prize is a new award, presented for the first time by Professor Garth Coffin to Yohann Frappier in recognition of his efforts in the agricultural economics major.

Linda Jacobs Starkey's popular column "Issues in Human Nutrition" will return in the next issue of *The Macdonald Journal*.



Diploma student Guylaine Laberge and Mme Paulette Houston participated in the first presentation of The James Houston Memorial Award. Mr. Houston served Macdonald College Farm for 42 years.



Emeritus Professor Helen R. Neilson (r) presents a scholarship in her name to Andrea Corwin, a third year dietetics student.

Correction

In Professor T.C. Meredith's Focus Environment column entitled "Mastery for Service" (*The Macdonald Journal*, Fall 1989) we neglected to attribute the following quote on page 22 to James Downey, President of the University of New Brunswick: "The essential purpose of the university is not to carry out research, nor even, in the conventional understanding of the term, to teach, but to furnish a critical commentary upon the assumptions, beliefs, values, knowledge and technologies that inform and support social order." Our apologies for the oversight.

Reunion '89, Part 11

Dean's Reception, October 14, 1989

"This is the largest gathering of people that I have seen at one of these receptions," Dean Roger Buckland said, "and it's thanks to Helen Neilson, who has drawn everyone here to ask her to sign copies of her long-awaited new book which we are launching today."

While Helen Neilson autographed copies of her book, the Dean highlighted some of the year's activities at Macdonald. Of concern is the decline in student numbers in all agricultural institutions in North America, and he pointed out that that decline has now hit Macdonald. He urged graduates to assist in the recruitment of talented students. The faculty is in the top three at McGill in research dollars and the number of post-graduate students is increasing. He said that the School of Dietetics and Human Nutrition had moved into new facilities on the main floor of the Macdonald-Stewart Building and that students in the school represent about 30 per cent of the undergraduate population. Dean Buckland discussed the new facilities for the Lyman Museum and said that Glenaladale had been taken out of mothballs, refurbished and repaired. The Ayrshire Breeders of Canada, Quebec's regional English media association (AQREM), the QFA, and others have moved in as tenants and the Dean is delighted



Emeritus Professor Helen Neilson signing copies of her new book on Macdonald during the Dean's reception.



Congratulations to Cyril and Christine Dahms, pictured here with Dean Buckland, who celebrated their class of '39's 50th anniversary and their own 50th wedding anniversary. Branch President Rick Caron is to their right at the podium.



The Class of '37 was represented by Don Adamson and Celia Ferguson Henneberry, seen here receiving gifts from Dean Buckland.

to have them on campus. He said a new challenge will be to find tenants and a way to renovate Britain Hall.

Dean Buckland answered various questions from the floor and once again thanked everyone for returning to Macdonald. Jean McHarg thanked the Dean and Professor Neilson for her valiant efforts in writing the history of



Woodsmen and woodswomen and former coach Bob Watson, second row standing, gather for the official 30th anniversary reunion photo.



The Class of '64's official photo: first row, 1 to r, Phyllis (Carkner) James, Barbara (Oulton) Scott, Joanne (Bush) Lamberty, Carol (Phene) MacLeod. Second row, 1 to r, Bob Hyndman, Diane (Liddiard) Pirhonen, Ann (Ferguson) Oggel, Louise (Knowles) Gatenby-Krueger, Viola Horsham, Bernice (Prevatt) Sullivan. Third row, 1 to r, Kevin Aucoin, Don MacDonald, Eugene Terry, Jan Oggel, Marilynn (Boyd) Small, Alison (Davidson) Bogan, Elaine Hill, David Appleton, Don Graham, Charles Trail.

Macdonald College.

Woodsmen's 30th

"If I used to get up at five o'clock for practice, I think I can make it for 8:30 breakfast tomorrow," Jack Sadler, BSc(Agr)'79 and former Students' Council President, said as he returned to campus on Friday afternoon.

Breakfast started the celebrations off on the right foot for some 60 present and past woodsmen and woodswomen who gathered on the campus to celebrate the Woodsmen 30th Reunion and Competition. Athletics Director Bill Ellyett and Coach Johnnie Watson greeted the grads and organized the teams and some keen but friendly rivalry. It was much warmer than the usual minus 20 late January temperatures for the annual Macdonald competition and, with no snow on the ground, the snowshoe event was, let's just say, different. Eric Thompson, BSc(Agr)'71, MSc(Agr)'75, tells us that his team won the competition easily! They were cheered on by their former coach Bob Watson. Several of the Woodsmen joined in other events taking place on campus during the day and also joined with the Diploma Graduates' Association for the barbecue supper and reunion party.

Beyond These Gates

A World Winner: Well Done, Gordon Thomson

Hemmingford, Quebec, may be noted for its apple orchards, but more recently it has captured world-wide attention as giant pumpkin-growing country. Last year Gordon Thomson, BSc (Agr)'48 and former Information Officer at Macdonald College, grew a record-breaking 343 kilogram (755 pounds) pumpkin which measured 385 centimeters (151.5 inches) around. Gordon is a member of the World Pumpkin Confederation (WPC). One of their 1989 weigh-off sites was Collins, New York, on Monday, October 9, 1989. This giant pumpkin, which bettered the previous record by 38 kilograms, has earned Gordon a place in the Guinness Book of World Records and a great deal of media attention. Gordon worked hard for this fame, often spending from three to four hours a day in the garden. It's also a labour of love. As Gordon said, "It is fascinating to see the reaction to what you are doing — to see the speed at which the plants and pumpkins are growing. It's intriguing. Billions and billions of new cells every day!"

Originally from apple orchard country in Abbotsford, Que., Gordon, who majored in Horticulture, and his family are part of the Macdonald clan. Gordon's father was President of the Class of '23, his wife Enid graduated with a degree in Home Economics in 1950, and their daughter Jane, with a degree in Food Science in 1973. Gordon was a member of the Royal Commission on Agriculture, Information Officer at Macdonald, and then became a specialist in marketing pork and processed meat for the Quebec Ministry of Agriculture. In 1985 he retired to Hemmingford where he built his own home and, that completed, turned his attention to visiting his friends and neighbours, the Petches, and to gardening and giant pumpkins.

Can Gordon break his own record? He says it will certainly be broken one day, possibly

Howard Dill
R.R. 1
Windsor, N.S.
BON 2T0

even this year, but past history says it likely will be someone else. One young man who might try competing with Gordon is Mike MacDonald, a third-year Diploma student. A colour photo of Mike and his first attempt — a 153-pound pumpkin made the front pages of *The Record*, the Eastern Townships daily. Mike's parents have a dairy and vegetable farm just outside of Lennoxville on the MacDonald Road. Mike has recently returned to the home farm, where they milk 23 Holsteins and have seven acres of market garden, sweet corn, and squash.

David Wees, of the Department of Plant Science, and Hazel Clarke, Editor of the Journal, sat in as Mike MacDonald questioned Gordon Thomson on some of the finer points of growing record breaking giant pumpkins.

Mike: How many years have you been growing giant pumpkins?

Gordon: Last year was my fourth season. Going through the seed catalogues the first year I spotted seeds for giant pumpkins and thought I would order some. I now order directly from Mr. Pumpkin himself — Howard Dill in Nova Scotia. Howard Dill won several consecutive international championships which naturally aroused the interest of other competitors. He still competes and his seed business has grown tremendously. As well as selling to major seed companies, he and his son Danny get some 5,000 orders for the seed he developed — Dill's Atlantic Giant — from all over the world. I can be specific when I order seed from Howard, and I can get the type of breeding I want.

Last year I paid \$1 a seed. I bought two sets of five (two dif-

ferent pumpkins). The set I grew the big one from was from his runner-up in the 1988 World competition that weighed 616 pounds. I specified that seed. With giant pumpkins only averaging around 300 pounds a few years ago and with them now around 700 pounds, breeding has to count. The selection for size has to be fairly dominant.

Mike: How early do you start?

Gordon: I was ready for April 30th last year. I have made a small growth chamber that keeps the temperature around 80°F. I planted the seed in a mixture of peat and vermiculite in 4-inch peat pots that had been well watered. I set them out one week later in some cold frames which I use as buffers to get them started.

Mike: How do you prepare the bed?

Gordon: The soil is clayey-loam, and I have to use liberal doses of manure. I use 5-20-20 in the fall which I rotatill in. I get a winter load of cow manure and leave it right where I am going to plant. I'll double dig a hill 6 feet by 6 feet and use a lot of composted sheep manure to lighten up the soil. I also put on a good dose of 10-10-10. I install some subsurface electric cables which will bring the soil temperature up to around 70°F. I also put in



Gordon Thomson and the biggest pumpkin in the world at Collins, New York, Weigh-Off. It weighed a record-breaking 755 pounds.

irrigation tubing every 18 inches. The tap is turned on slightly, and it leaks about one gallon a minute.

Mike: Do you use fertilizers and fungicides during the summer?

Gordon: Additional fertilizer depends on the early season weather. If I feel there has not been the nitrification I want, then I will probably feed the main root some 18-20-22. I don't believe in feeding the major nutrients without the minor ones as well. I use a systemic fungicide to control mildew. The squash bug and the cucumber beetle require sevin when they appear.

The winning pumpkin was growing 15 to 20 pounds a day at its peak growing period, and the plant was growing at the same time. I don't prune to stop the plant from growing. Secondary roots that are going down at every node are important: you won't grow a big pumpkin with just the main root. At the minimum you should pin down the nodes along the main and secondary vines so that they are in intimate contact with the soil. That's where the sheep manure comes in. I put about a 5-inch pail full on top of each node and soak it with a little 10-52-10.

I had two pumpkins on this one plant. Quite a dip developed early in August, and I was afraid to cut the second one off. It ended up at 522 pounds. Nip off all the pumpkins once you are sure you have one that suits you. I break off the female flowers.

Mike: You hand pollinate?

Gordon: I use cheesecloth to keep the bees and other insects out. You should pollinate around 7 a.m. in the hot weather as by noon the female flower is closing up and by 4 p.m. it's completely closed. I pollinated the winner on July 4th. It wasn't that big a plant at the time. The tie was about 10 to 12 feet from the crown. I use pollen from a different plant — these giant pumpkins are starting to be inbred enough. One man had a 625-pounder this year and he didn't get 20 seeds out of it. He had pollinated to the same plant.

Mike: How do you prevent the stems from breaking?

Gordon: There are various ways to prevent this, but the classic one is to make a bit of an "s" when the vine is small so that there will be some leeway later on. Then the secondary roots are cut from opposite the immediate area of the stem to allow you to lift and free it up. As well, take the pumpkin at the apex and gently tip it a little bit so that it won't be on a horizontal plane with the stem.

Mike: Tell us about competing?

Gordon: For a \$10 U.S. membership I joined the World Pumpkin Confederation (WPC) which has its headquarters in Collins, New York. I get two newsletters a year which keeps me up-to-date. There is a competition in the southern hemisphere which takes place in March. There are World competition sites in Nova Scotia, in Topsfield, Mass., for New England growers, and in many other parts of the U.S., Canada, and the world.

I first competed at the Havelock Fair with a 191 pound pumpkin. There are two special events in Quebec. One is the *Festivale de la Citrouille* held in Iberville in late October. The other is a provincial competition held by the Montreal Botanical Gardens in late October, where I took first prize with another one of my pumpkins.

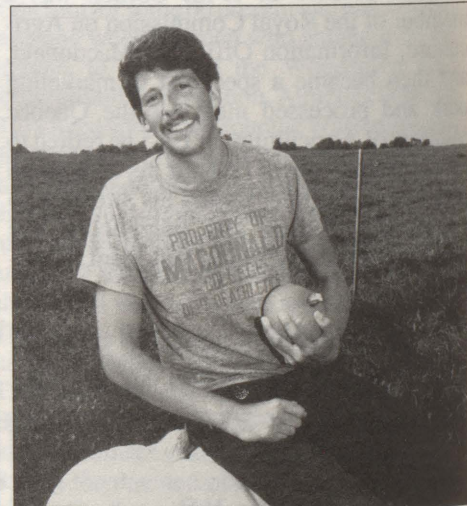
One of the nicest comments made to me during the competitions was from a grower who was a runner-up to me at Montreal. She said that the Quebec growers had accepted as fact that our climate limited the potential size to 100-150 kg (220 - 350 lbs). Now they would try harder and possibly compete internationally. This year a man from Wales grew a 322 kg (710 lbs) pumpkin. Everyone knows you don't go to Britain for the weather — he must be one heck of a gardener!

The thing that I got the biggest thrill out of was working with the children from the elementary school in Hemmingford. We had 78 children growing pumpkins from seed I gave them last year. I told them they were going to

have to show at the Havelock Fair even though some were late in starting their plants and may not have the biggest and the best. One of the children had a 218-pounder. That youngster was walking this high off the ground. He was thrilled.

Gordon Thomson has some seed and is already planning for this year's competition. He mentioned at one point that it's a 120 day growing period: 60 days belong to the vine and 60 days to the pumpkin. There's much more than 120 days, however, for any competitor as serious as Gordon is about producing these giant pumpkins. He planned to spend some of the winter months trying to answer a lot of questions. How's the nutrient translocated? If I spray with a systemic fungicide, how is it translocated? Is it? If I spray with a liquid form of calcium nitrate, how is it translocated within the leaf? Within the stem? It is suggested that you don't grow the pumpkin too close to the main root because it won't get support from the vine. Is there some basis for this suggestion?

Our congratulations Gordon for a job well done. Good luck in going for the 1,000 pounds. Good luck, too, to Mike MacDonald: as a pumpkin grower and as a new Dip graduate returning home to take his place on the farm and in the community.



Mike MacDonald was equally proud of his first effort — a 153-pounder.

FOCUS Environment

Christmas Trees Without "Chemicals"



by Dr. Stuart B. Hill, Director
Ecological Agriculture Projects

As more and more people are becoming concerned about pesticides and other disruptive chemicals in the environment, some are

even asking about the chemicals associated with Christmas tree production. Widespread publicity about possible contamination of Christmas trees with pesticides and the resultant pollution of indoor air with these materials, or about environmental damage associated with intensive methods of tree production, could dramatically reduce the demand for real (versus artificial) Christmas trees. To avoid this, it is imperative that growers develop an environmentally friendly public image, and develop and employ production practices that are worthy of such an image. Christmas may just have passed, but growers should already be thinking of Christmas 1990.

Often we can learn quickly from those in society who have taken an extreme position - in this case - from the "organic" growers who, because they use no synthetic pesticides or fertilizers, are forced to employ a wide range of alternative strategies.

In such a short column it is not possible to give details of all of these practices, but it is possible to provide a general framework for an alternative approach. In this way, individual growers are free to experiment, on a part of their operation, with whichever strategy is most attractive.

Dependence on chemical inputs can be reduced by means of the following three progressive strategies:

1. Improved Efficiency: monitor for pests (e.g., using pheromone traps) and apply controls, using properly serviced equipment, only when the pest reaches the economic injury level. Electrostatic sprayers may also reduce pesticide needs. Over half the pesticides currently used

could probably be eliminated by simply following this approach.

2. Substitution of Less Disruptive Controls: non-residual, narrow spectrum pesticides, hormones, growth regulators, biological controls (predators, parasites, pathogens), traps, repellants, etc. (*Bacillus thuringiensis*) can be used for most moth caterpillars, predatory gall midge larvae, minute pirate bugs, lacewing larvae and ladybird beetles can help to control aphids. Some of these insects are already commercially available.

3. Redesign and Management of the System to Prevent Pest Outbreaks: this involves selecting the most suitable resistant crop species and varieties, and mixing species and age classes as much as possible and ensuring that the site and the planting and maintenance operations are supportive of the trees and unsupportive of the pests. Plant spacing, transplanting, fertilization, irrigation, drainage, management of companion crops and ground vegetation, and of livestock and wildlife, all need to be taken into account. For example, weeder geese or sheep may be used in certain situations in place of herbicides and fertilizers. In other places, stone and organic

mulches may be useful under trees or flame weeding may be used (with great care!). Insectary plants, such as members of the Umbrelliferae, goldenrod and buckwheat, may be planted to attract predators and parasites of the pests. Intercrops may also be used to diversify the environment and so make it less attractive to pests that are particularly bothersome in monocultures.

Leaf/needle analysis can indicate any trace mineral deficiencies which, if corrected, often make trees less susceptible to pests and diseases. The application of blended compost fertilizers has been successful in some areas. Bird boxes may be used to selectively attract those species that are insectivorous.

Actually, the possibilities are as endless as the ingenuity of nature itself. In many ways our dependence on chemicals has temporarily robbed us of making the exciting discoveries of how we can live in harmony with the other species on this planet. In this sense the pesticide crisis is, indeed, an opportunity which, in the long run, will translate into an economic saving as more permanent and sustainable systems of resource management are found.

Friends of the Journal

It is with particular pleasure that we take this opportunity to acknowledge those individuals, companies, or organizations who have made a recent financial contribution to *The Macdonald Journal*. Their thoughtfulness and support is much appreciated.

Mehdi Abdelwahab and Joy MacAulay

Martha Cummins-Shannon

Fisher Scientifique Limitée

G.D. Madigan

Dr. J.F. Gerald Millette

Elaine Vininsky

Gregory Weil

West Island Women's Institutes

Diploma Corner

FOCUS Environment

Christmas Trees Without "Chemicals"

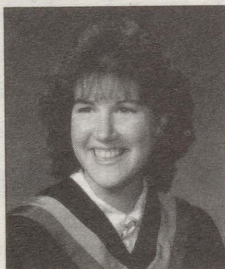
Diploma Reunion '89

Steven Latulipe, President, and the rest of the Diploma students in the Class of '91, and the executive of the Association are to be congratulated for an excellent afternoon and evening get together last October 14. Registration began at three o'clock and later that day we heard that 95 Dips had signed in. I also counted several children, numerous cats, two dogs, and one rabbit! If you measured the success of the reunion in terms of barbecue suppers alone, there were 209 sold. Congratulations to head chefs Steve Olive, Registrar, and Eric Norris, Chairman of the Department of Agricultural Engineering. Special tribute was paid to the three graduates from the Dip Class of '39: Boyd Honey, Stuart Merrill, and Keith Rose. The Class of 84, celebrating their 5th reunion, are a very close knit group and meet several times during the year. It is no wonder, therefore, that they took the trophy for the highest percentage - 17 - of the class in attendance. Which class will challenge them this year?

The Diploma Graduates Association hosted the Reunion Party on Saturday evening in the Deep End in the Centennial Centre. Some 150 people turned out and "it was like an old Ceilidh party - a good crowd," said one keen participant.

New Liaison Officer

The Diploma in Agriculture Program welcomes Anne Brunet as the new Liaison Officer. "Having just completed the Diploma Program myself," Anne said recently, "I feel it is quite an honour for me to become part of the staff. I see the position as an interesting challenge and a totally new experience."



Anne was raised on a purebred beef farm in St-Placide, Quebec, and has also worked on several beef farms in eastern Canada and the United States. Anne started her own custom



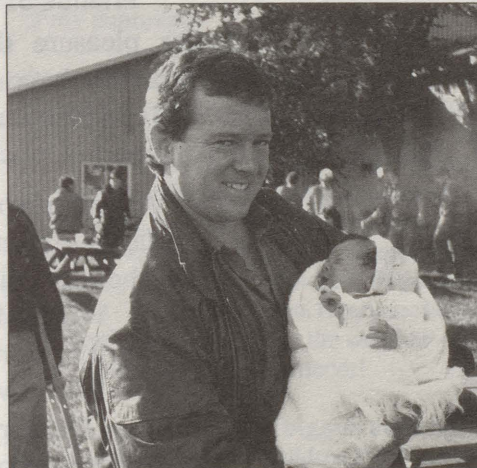
Three "48As" get together, l to r, Charlotte (Beattie) Griffith, BSc(FSc)'83. Ann Louise Carson, BSc(Agr)'81, and Nora (Clancy) Templeton, BSc(Agr)'82.

fitting and showing business last April and plans to continue this enterprise while working at Macdonald.

"I'm looking forward to the challenge of being the Dip's Liaison Officer," she said. "The position includes being responsible for student recruitment, working with the Diploma judging team, the Diploma Graduates' Association, and organizing Reunions."

Diploma Reunion '90

As you may already know, the next Gradu-



The youngest fellow at reunion was five weeks old Sean seen here with proud father Kevin Figley, Dip'79.



A reunion of old friends, l to r, Betty and Norm Campbell, Dip'66, Jo-Anne Duckworth, Dip'66, her dad Stuart, Dip'39, and mom Alice, and Jack Duckworth, Dip'68.



Wendy and Doug Best, Dip '64 were here on holidays from Horsefly, B.C. Doug said he saw lots of changes but it's still Mac!

ates' Reunion will be held on September 22, 1990. We would like to emphasize participation of the classes of '40 and '65, as they will be celebrating their 50th and 25th anniversaries respectively.

In order to send out Diploma Association news and information, we need help to find names and addresses of some of our Diploma graduates. Please send any information about "lost dips" to Anne Brunet, Diploma Program Liaison Officer, Box 204, Macdonald College, 21,111 Lakeshore Road, Ste. Anne de Bellevue, Que. H9X 1C0.

Lost Dips 1940

- | | |
|---------------------------|-------------------------|
| Bachelor, Allen Leland | Krasa, Ladislaus |
| Bertrand, Jacques Jean | Monovill, Robert John |
| Broadbent, Robert | Marchand, Maurice |
| Buzzell, Clarence Winslow | Robillard, Jean Jacques |
| Chamberlin, Harold Arthur | Ward, Thomas Allen |
| Dalton, Ernest Robert | Wellby, Peter Sanford |
| Geddie, Talbot | |



The Quebec Women's Institutes

ACWW Conference in Kansas City

What a wonderful feeling of friendship was felt among the 1,200 women who attended the 19th triennial Associated Country Women of the World conference held in Kansas City, Missouri, last September. The opening ceremony was most colourful with the Missouri 4-H Club, wearing green blazers, presenting the flags. The 80 member choir wore white gowns with red and blue collars.

President Bush sent greetings. As ACWW was celebrating its diamond jubilee, he mentioned changes that have occurred during the past 60 years and also commended ACWW's efforts to reduce world hunger and malnutrition, to improve educational opportunities for all the people of the world, and to promote international understanding and friendship.

Dr. Ellen McLean, ACWW President, welcomed all and brought greetings from our Prime Minister, the Premier of Quebec, and from people in many other countries.

The crafts and sales tables were wonderful. Swirls of patterns and colours greeted the visitors as they entered the ACWW quilt display, which included about 80 quilts and 40 other items: wall hangings, vests, Christmas skirts, and crib quilts. There was also a display of seven quilts, tea towels, pillow cases, aprons, tablecloths, and a baby quilt which were all made from feed sacks.

The interfaith church service was most inspiring. Dr. Eugene L. Stowe, former pastor in the Church of the Nazarene, gave the message. Following the service 25 buses took the group out for Hospitality Day, and we were shown it in perfect vitality and friendship, to say nothing about the food.

Monday we got down to work. There were nine workshops held in the two days. Each could attend eight, if tickets could be had. They were: Eat Well - Be Well; Children of Today are Tomorrow's World; New Choices versus Old Traditions; Food Supply and

Demand; Standard of Living - Quality of Health; AIDS - A Threat to the Family; The International Market Place; Your Resources - My Resources - Our Resources; Man's Dependence on Energy, and New Challenges - Happy Families.

U.S.A. Day was most enjoyable with a variety of music, food, entertainment, crafts, games, and decor. Each was presented with a gift at day's end. Diamond Jubilee: We Share a Dream - a tableau compiled and produced by Nova Scotia WI members depicting the 60 years of the ACWW was presented by the women of Canada assisted by the 1989 Triennial Choir.

Dr. McLean gave a wonderful address on the first full day of the conference and as the farewells began to take place, her farewell speech was a moving experience. She spoke of her feelings for ACWW, thanked the many who had made it possible for her to have the opportunity, the many she had met, and said she hoped she had helped in some small way.

Mrs. Valerie Fisher from Australia is our new President, and Yolande Calvé was re-elected as Canada's Area President.

The theme of the farewell party was international. We were presented with passports which entitled us to journey through the culinary delights of five continents. A completely stamped passport entitled a member to be eligible for a special prize at the end of the evening. It was a truly fantastic evening and certainly made me glad I was there.

Carolyn Knox
Clarendon WI
Pontiac County

Jeannine Lussier
Provincial Convener
Home Economics and Health

I am a French-speaking Canadian who was born on a farm. In a family of three daughters and no sons, I helped my father a great deal as I was the tallest. Our school was directed by the Sisters of Charity. After Grade VII, my

eldest sister and I finished our education at a convent in Montreal. We boarded at the convent and only got home three times a year. I do not regret it now, but at the time I found it very hard, and I am glad that times have changed.



As did many others during the war and after marriage, I found work outside the home. I was with a dress manufacturing company for 28 years. I have two children, a son and a daughter, two grandchildren and two great grandchildren. My husband is retired and prefers to be a homebody. He enjoys raising rabbits. We enjoy life, but I am the active one.

I joined Granby West WI in 1964. I was elected President in 1965 and have held several offices at branch and county levels. I enjoy working with the members of our county. Many may have more experience than I, but I can still share with them some of my knowledge. I am a volunteer in a Benevolent Centre for elderly people. As many of our members in the county are not as young as they once were, I have tried to get them interested in the things that concern them. I am active at our Golden Age group - ours is called Le Club de la Bonne Humeur, and I am Vice President.

Safety First

by Elsie Prevost

Some Plates
Are Just For
Decoration

Children and their parents may have received decorative plates as





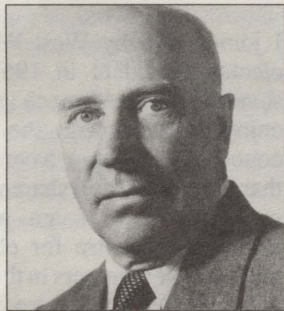
Christmas presents. Many of these plates are hand painted and the paints may contain heavy metals such as lead or cadmium. If such plates are used in serving food, these metals may be absorbed by the food. Lead and cadmium are stored in the body. If you or any member of your family received a decorative plate, don't use it for serving food unless you are certain it has been properly glazed and is not hand-painted.

Before buying a decorative plate, inquire about the decoration and its method of application. Remember to inform the recipient about what you have learned.

"See Me" Reflectors make great gifts at any time of year. Remember, by giving them you may be saving lives!

The Walter Hodgeman Memorial Bursary

A new scholarship, called The Walter Hodgeman Memorial Bursary, is available in Compton County. This scholarship is to help deserving students in the field of agriculture and was made possible by money left by Walter Hodgeman to the Compton County Women's Institutes.



Walter Hodgeman

Walter Hodgeman was a descendant of an Empire Loyalist family who had settled at Birhton in the Eastern Townships in the early 1800s. He was born in 1895 and took over the home farm in Birchton in 1926 when his father was killed in a car accident.

In addition to his farming career, he led a very active public life. He sat on the Eaton Council, served as a school commissioner, was an active member of Birchton United Church and a life member of both the Masonic

Friendship Lodge in Cookshire and the Compton County Historical and Museum Society. He was secretary of the Compton County Agricultural Society for 21 years and a great supporter of the Cookshire Fair. He was well known for his role in Radio Farm Forum, having acted as provincial director and president.

Walter Hodgeman died in 1987 in his 92nd year. It was his deep interest in the education of young people that led to the establishment of this memorial bursary which can be applied for by any resident of Compton County, beginning or currently engaged in agriculture or related studies. Application forms are available from the following people: Muriel Fitzsimmons, Box 112, Bury, Quebec, JOB 1J0; Mabel Mackay, Box 155, Sawyerville, Quebec, JOB 3A0, and Dorothy Loveland, R.R. 5, Cookshire, Quebec, JOB 1M0.

Muriel Fitzsimmons
Secretary
Compton County WI Bursary Fund

Quebec EXPO Winners

Baldwin-Cartier: June Kelly - Cross Country Ski Hat and Socks; Ruth von Brentani - Tablecloth.

Chateauguay-Huntingdon: Hermina Allen - Cross Country Ski Hat and Socks.

Gaspe: Mary Baird - Smock, Cross Country Ski Hat and Socks.

Richmond: Janine Sterl - Tablecloth.

With the Branches

ARGENTEUIL The Handicapped Association honoured Bev Morrison, President of **Arundel**, for help and support given them the past five years. Recently learned facts about insects: a pair of house flies will breed at a rate of 191,010,369,000,000,000 by summer's end; cockroaches have been in existence for over 200 million years and are still hard to control; an ant can lift 50 times its own weight, and a flea can jump 50 times its

length. **Brownsburg** agreed to support the Child Welfare Survey; gave an afghan to a former member now in a home. They and other branches have sent letters to mayors, ministers of environment, and other officials re polluted condition of the North River. **Dalesville-Louisa** - One guest, Sylvia, decided to become a member. She is not unfamiliar with WI work as her mother was a member. Welcome to our organization. The Brownsburg postmaster spoke at a meeting. **Frontier** had 19 members and 20 guests at a meeting when Dorothy Keatlie received her 25-year pin and the guest speaker was Sharon Van Realte, who is a member of the Canadian Eskimo Arts Council and an expert on Inuit art. She worked with the National Film Board when the film "Lypa" was made: about an Inuit man working to keep the customs of his people alive for future generations. **Grenville's** Agricultural Convener reported on a new strawberry harvester being tested in Kentville, N.S., which could help Canadian growers grab a larger share of the processed market by cutting costs. "Simply Scarves" resulted in an interesting demonstration of different ways of tying and wearing various scarves. Sales of scarves benefited branch funds. Members, friends, and husbands enjoyed the annual casserole supper and saw slides of New Zealand and Australia. (I personally like the idea of including husbands in events). Congratulations to **Jerusalem-Bethany** on celebrating their 70th anniversary. Alma Smith and Jessie Kettle are Charter Members. Mrs. Kettle, now 102 years young, was unable to attend. Mrs. Smith reminisced on how things were 70 years past when the branch was first organized by Mrs. John Boyd. One of the first major projects was to have a well dug at the school to provide safe drinking water for the children. The first fund-raiser was a lawn social when cake, ice cream, and a drink was bought for 25 cents. (I doubt we could buy the cone without the ice cream for that today!). **Lakefield** motto: some minds are like concrete - permanently set. Donations sent to the Old Brewery Mission and Douglas Hospital. The talents of this group showed up in taking five firsts, three seconds, and one third in prizes at the Lachute Fair and Connie, Judy,

and Anne took first prizes in the J & P Coats competition. (Great show girls. We need to keep encouraging members to get involved in these competitions.) Members were preparing to make a quilt. Ever heard of the Gas Flushed Chicken? Home Economics and Health Convener of **Pioneer** told of this being the term for a high tech packaging process in which the bird is precooked without preservatives in a vacuum-sealed bag; the end results don't require refrigeration and the chicken is ready to be popped into the microwave. **Upper Lachute East End** - The President presented a card and a gift to Mrs. Gerald Dawson whose family had the misfortune to lose their barn and cattle in a fire. A donation was made to Steven O'Brien toward athletic training. The Agriculture Convener told of a video camera system which allows farmers to monitor their animals in the barn from the house.

BALDWIN CARTIER How's this for a challenge and something different! **Lake-shore** members brought flower arrangements made in an egg cup. Ray Doucet of *Gazette Probe* was a very informative and humorous guest speaker. Christmas shopping for dolls in 1850-1980 was the theme for the November meeting, when members brought in their treasured dolls. "World Without Men" was to be acted out at their Christmas Pot Luck Supper. CBC Wool Gathering items go to local women's shelter. Members mourn the passing of former member, Margaret Ayre.

BONAVENTURE Black Cape members were sorry to lose a valued Charter Member, Mamie Campbell, who passed away in Montreal. Congratulations to Myrna Howatson who received a \$200 bursary from the branch. A "Slip Proverb" contest was held during social hour. (Please send us an explanation of what this is all about.)

BROME Abercorn held their annual yard sale. The church guild uses their hall for meetings and in the spring the use of the hall is donated for cemetery meetings. **Austin** donated to the Blind Institute to aid their library of talking books. They sent a letter to

Nestle objecting to the distribution of milk formula in third world countries as the water is often contaminated and poor sanitary conditions can exist which endanger the health of babies. Provigo store in Magog was sent a letter of congratulations for their informative weekly advertising flyer. Talented Betty Telford sang a song she composed pertaining to summer activities.

CHATEAUGUAY-HUNTINGDON

Aubrey-Riverfield Joyce McKell won first prize on tating. (Congratulations! This is a craft that not too many do any more.) **Franklin Centre**, being noted as a very family oriented group, held their annual family picnic and a time of fellowship and sharing between young and old was enjoyed. They celebrated the 89th birthday of one of their oldest members - Lily Arthur. **Hemmingford** - 33 students participated in a Public Speaking contest. Their quilt is completed. They had two visiting WI members from England. Canadian Industries Convener reported the Havelock recycling project involves over 50 per cent of the households. On a tour around his orchard, Robert Petch explained the new individual irrigation system. Members also saw the experimental area where different varieties of fruit were growing. Congratulations to Margaret Keddy, Jean Brown, and Edith Fisher upon receiving Life Memberships. **Howick** had a review of the organization and using a chart discussed the ACWW, FWIC, and QWI. Held a contest/game identifying 30 of 70 countries belonging to ACWW. They heard how they can help with the building and renovation of their local hospital when Wink Keeler was guest speaker. **Huntingdon** held a vegetable binge contest (again, more info please) and entertained Franklin WI.

Compton County published 10-year history to attach to the 65-year one. Wilda Robinson spoke on "Cut down on pollution and garbage" and discussed recycling and suggested not using disposables. (I wonder what young mothers think of this?) Many items were brought in to semi-annual for Wool Gathering. The following bursaries were given: The C.D. French Memorial to Kandy Mackay;

Walter Hodgeman Memorial to Matthew Bigbee, and the Compton County WI's to Steve Alaire, Leslie Wintle, and Wayne Lassenba. World Food Day was commemorated by sending food to senior citizens' homes and donating money to schools for books. Lavina French spoke on Hereford Railway Riot in 1888 and extended greeting to **Canterbury** and **Sawyerville** who were celebrating their 75th anniversaries. **Brookbury** assisted a girl on her trip to Newfoundland and the Boy Scouts to Fort Amherst.

MEGANTIC Congratulations to this county for sponsoring one of the few School Fairs. Prizes are given for such projects as: an animal face on brown paper bags; pencil holder using a juice can; birthday card for a family member, and a poster of a place one would like to visit. (In reading the account of the county's 71st annual meeting, I thought their idea to judge and give a prize for best essays written - from the county level - prior to sending them on to FWIC was a good one. These ideas keep our WI "in the public eye.") **Inverness** mottoes: What a wonderful thing the brain is - it starts working when you are born and never stops until the day you stand up to speak. For World Food Day two carloads of members visited the Wales Home to serve tea to over 40 residents. This branch was among other associations who donated and symbolically planted trees on the Methodist Church grounds to represent life, cooperation, and the future of their community. The WI served coffee and cookies for the event.

MISSISQUOI Cowansville Sixteen members and guests went for lunch in a new restaurant following a visit to a new winery in Dunham (formerly the Doherty farm) and completed their outing with a visit to the county museum. **Dunham** gals and a few guests enjoyed lunch at the Casa Restaurant in Knowlton prior to attending the play "The Owl and the Pussycat" at Lac Brome Theatre. On behalf of the Dunham WI, the President, Thelma Doherty, received a certificate from the town acknowledging the importance and worth of our organization within the commu-

nity. Pearle Yates, member and Provincial President, spoke on the ACWW conference in Kansas. She and the president attended the lecture given by Gwen Parker at Bishop's University. **Fordyce** entertained Sutton and Stanstead North members at a salad luncheon. They visited Dean & Son Printing Company. Celebrated World Food Day with each member donating \$2 which was divided between Hero's Elementary and St. Leon Schools for hot lunches. **Stanbridge East:** Book prizes given to local school for improvement in French. Gave scholarship to a young woman graduating from Massey-Vanier who intends to continue her education. A guest speaker described commercial knitting machines and displayed samples of material. Held a contest to guess baby pictures of members. County held another successful luncheon and card party. Donation made to Hoodless Home in memory of Myrtle Tait of \$1.00 for each year she was a WI member. Donated paper products to home for battered women for World Food Day. Contributed to Hoodless Fountain Fund.

PONTIAC Wyman: A demonstration was held on paper tooling pictures. Bibs were brought in for the Ade Home. The Cultural Affairs Convener questions why all cyclists are not made to wear helmets.

RICHMOND Members from all branches attended a meeting with Susan Mastine of The Townshippers on citizenship and advocacy. **Cleveland** Posters were distributed on National Handicapped Awareness Week.



Members of the Cleveland WI celebrated their 70th anniversary last October.

Book prizes given to students in grades V and VI for effort and improvement. They held a barbecue and bought plaques for Richmond Youth Fair, and they included their husbands in 70th anniversary celebrations held at Scotch Hill. **Melbourne Ridge** entertained Richmond Hill WI, held annual picnic at which nine children attended and enjoyed playing games. They toured Clairol in Knowlton. Jeannine Sterl took second prize at Expo Quebec for a crocheted tablecloth and Shirley Flower won the County WI cup at Richmond. **Richmond Hill** held a social evening and presented member Mary Lockwood with 50th wedding anniversary gift. **Richmond Young Women** gave awards to elementary school children, held a plant and slip sale, wore Hallowe'en disguises at their October meeting, and visited the wildlife museum in Waterloo.

SHEFFORD Both branches held discussions re government inspectors at group suppers and food sales. **Granby Hill** Prizes were given to level VI and secondary I in local schools for improvement in Spelling and French. Kristine Goulet of Granby was presented with an award at Massey Vanier by Mary Enright, President. A quilt made 80 years ago by a member's grandmother was donated to the branch and sold to an antique store. They held their annual picnic at Fairmount Park. They wrote Transport Minister Bouchard re the use of Via Rail. Education Convener read that Canadians spell better than Americans or Britians, but Australians spell best of all. **Granby West** flowers were placed on graves of deceased members. Prior to a meeting, lunch was enjoyed at a Chinese restaurant. Canadian Industries Convener reported 150 people will be employed in the Rennett plant soon to be opened in Richmond. General Motors will hire 200 more workers. Remembered World Food Day by donating to the needy through Partage Notre Dame Church where they serve meals.

SHERBROOKE Wool Gathering projects go to schools and women's shelters. Members from this county and others attended the lecture by former QWI President Gwen



QWI Province of the Eastern Townships

ANNUAL FALL LECTURE
of the
Eastern Townships Research Centre

Guest Speaker

MRS. GWEN PARKER

Former President of the Quebec Women's Institutes

Subject:

**THE WOMEN'S INSTITUTES OF THE
EASTERN TOWNSHIPS:
LAYING THE FOUNDATIONS FOR
SOCIAL PROGRAMS**

THURSDAY, NOVEMBER 2, 1989 at 2:30 P.M.

Studio Theatre (next to the Centennial Theatre)
Bishop's University, Lennoxville, Que.

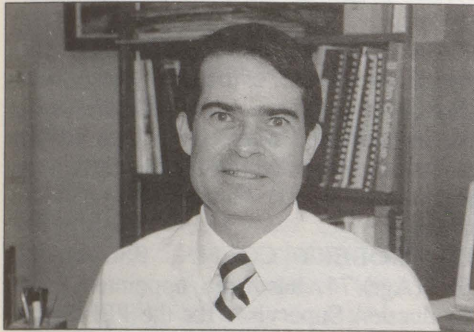
Parker on "The WI in the Eastern Townships - Laying the Foundation for Social Programs," which was held at Bishop's University. **Ascot** members held a meeting at Grace Christian Home and took the meal to the residents who have come to look forward to this annual gesture of goodwill. They donated to the history class fund to visit England and to the elementary school for hot lunches. **Brompton Road and Milby** visited the St. Laurent Museum, the home and store of former Prime Minister Louis St. Laurent's family. Congratulations to **Lennoxville** WI who celebrated their 75th anniversary. The yellow mums and blue iris in the head table centrepiece were in memory of Jessie Pierce and were donated by her daughter Catherine Vaudry. Cut flowers, donated by her family, were in memory of Olive Wallace. QWI President Pearle Yates brought greetings from the executive and spoke briefly on the role of women in the Institute. May Povey was presented with a Life Membership. Doris Cascadden gave a brief history of the branch which began in 1914. She also cut the beautiful cake which was donated by Phyllis Worster. One of the members, Muriel Brand, has been elected to the Town Council. **Milby** presented a bursary in memory of former member, Cornelia Orr. They - and **Lennoxville** - heard about school bus safety and safety in the electrical system in the home. They heard about a drill for action in times of disaster as the first 30 seconds are the most crucial.

Barbara E. Harvey
QWI Publicity Convener

Newsmakers

On Campus

Associate Dean, Academic and Student Affairs



Our congratulations to Dr. Rodger Titman, who became Associate Dean, Academic and Student Affairs, on January 1, 1990.

Rodger Titman grew up and went to school in Lachute, Quebec, where his father Don was the editor of the local weekly newspaper *The Watchman*. He went to Montreal to attend McGill University from which he was granted a BSc and frequently visited the Forum where Les Canadiens performed most successfully with his support. Leaving Montreal, Rodger Titman went to Bishop's University in Lennoxville and conducted field studies on the ecology and behaviour of ducks at the Delta Waterfowl Research Station in Manitoba. His MSc degree from Bishop's in 1969 is now a collector's item, there having been very few others awarded in that era. Rodger stayed in Manitoba to continue his studies of waterfowl but academic sessions were based at the University of New Brunswick in Fredericton where he met Elsie Aitken. They were married after Rodger obtained his PhD and was fully employed at Macdonald College. They now have two children, Stephanie, 6, and Ross, 4. Rodger Titman joined the Department of Renewable Resources in 1973 as a wildlife biologist, teaching wildlife management and ornithology and conducting research on the ecology and behaviour of birds, principally ducks. From 1983 to 1988 he served as Chairman of the Department of Renewable Resources.

IBM Provides Support to Macdonald College Computing Centre



IBM representatives, Robert Quance (l) and Claude Leclair (r) examining the new IBM PS/2 microcomputer instructional laboratory with Professor Chandra Mandramootoo, Director of the Macdonald Computing Centre.

IBM Canada Ltd. has entered into a joint study with Macdonald College on the use and application of the new IBM PS/2 model 50-Z microcomputers in soil and water engineering. As part of the agreement, IBM supplied

7 PS/2 model 50-Z microcomputers and ancillary equipment. The contribution of Macdonald College included a renovated instructional laboratory, 10 IBM PS/2 model 50-Z microcomputers, laser and dot matrix printers, and graphics plotters. This is part of an overall effort by the faculty to provide additional, and the most modern, computing facilities in support of its academic programs. Computing has been treated as a priority at Macdonald College in recent times, and we are pleased that industry is now supporting new initiatives.

Pfizer Gift

In the spring of 1989, rogar/STB Inc., a division of Pfizer Canada Inc., conducted a program with Quebec veterinarians whereby they received a Clondin Roy print of a snowy owl for product purchased. For each print given rogar/STB Inc. donated an amount to the Macdonald College Raptor Research Centre. At a presentation on October 20th, Dr. Bruce Groves, General Manager, Animal Health Division, presented a cheque for

Dignitaries, special guests, members of the Morgan Arboretum Association, and the general public enjoyed a warm and sunny Open House at the arboretum last September 30th. Opening ceremonies, displays at the Conservation Centre and the Chalet Pruche, the Annual General Meeting, guided nature tours, and wagon rides were enjoyed by all. Open House also acknowledged the support given by a Section 25 Job Development Grant from Employment and Immigration Canada. The six-month program provided funds to hire four naturalists and a graphic artist, who have designed and developed nature interpretation programs and given tours to the general public, school groups, and various associations. The Honourable Pierre H. Cadieux, P.C., M.P. Vaudreuil, was sincerely thanked for his continued support, interest, and encouragement. Taking part in the opening ceremonies were, l to r, Gordon de Jong, Beaconsfield Councillor, Walter Lawson, Morgan Arboretum Vice President, the Honourable Pierre H. Cadieux, P.C., M.P. Vaudreuil, Minister of Indian Affairs and Northern Development, Mrs. Bartlett Morgan, Dr. Roger Buckland, Dean and Vice Principal, Eric Thompson, Director of the Arboretum, Russell Williams, M.N.A. for Nelligan, at what may have been his first official function since winning his seat in the riding, Ovila Crevier, Mayor of Senneville, and Steven Lecours, Ste. Anne's Councillor.





\$2,800 to the Raptor Centre for research and education. From l to r, Dean Roger B. Buckland, Linda Joyce, Public Education Officer for the Raptor Centre, Dr. Bruce Groves, and Robert Hyndman, Director of Marketing.

Off Campus

HAROLD BLENKHORN, BSc(Agr)'50, recently retired from his position as Manager of Technical Services for Nitrochem Inc. One of his retirement "duties" was to give some lectures for Professor A.F. MacKenzie here at Macdonald.

KENNETH S. MACLEAN, BSc(Agr)'54, recently retired as Associate Professor in the Department of Chemistry - Soils at the Nova Scotia Agriculture College. Professor MacLean had been at NSAC since 1970.

A three-man task force on agrifoods has been appointed by Newfoundland's Minister of Agriculture, Graham Flight. HERB MACRAE, BSc(Agr)'54, MSc(Agr)'56. PhD'60, DSc'87, DR. BUD HULAN, BSc(Agr)'65, MSc(Agr)'68, and Carol Oates of the Newfoundland Federation of Agriculture are the three members. Dr. Hulan is chairman and a full-time member of the task force. The task force will inquire into and report on the current conditions and future direction of the agrifoods sector in Newfoundland and Labrador. Dr. Hulan has accepted the position of Professor of Biochemistry and Head of the Food Science Group at Memorial University. Dr. MacRae has re-

tired from his position as Principal, NSAC, but he plans to continue chairing the Canadian Agricultural Research Council and has accepted a part-time position as Executive Director of the Ottawa-based Confederation of Faculties of Agriculture and Veterinary Medicine in Canada.

DR. GORDON MACEACHERN, BSc(Agr)'57, has been appointed Deputy Minister of Agriculture in PEI. He was formerly with the PEI Potato Commission.

LLOYD PALMER, BSc(Agr)'57, has been appointed Chairman and Chief Executive Officer of the P.E.I. Potato Commission. He was with the PEI Land Development Corporation and also a former Deputy Minister.

CHARLES WARNER, BSc(Agr)'65, former chairman of the Farm Tax Rebate Program Appeal Board, is serving on a steering

committee made up of farmers, the Ontario Federation of Agriculture, and OMAF staff. The committee is undertaking a comprehensive program review of the Ontario Farm Tax Rebate program.

JOHN REDDEN, BSc(Agr)'66, has been appointed Director of the Livestock Services Branch of the Nova Scotia Department of Agriculture and Marketing. John Redden was the Assistant Director of Extension Services.

DR. ROBERT COFFIN, BSc(Agr)'71, MSc(Agr)'74, has been appointed Potato Production Supervisor for the PEI Department of Agriculture. A new Potato Services Division has been formed and Dr. Coffin will supervise the division's professional and technical staff and administer specialized programs. When fully operational the Division will operate out of Kensington. Dr.

GERALD SMELTZER, BSc(Agr)'45 of Kentville, N.S., was inducted into The Atlantic Agricultural Hall of Fame on October 5, 1989. A former agrolgist with Agriculture Canada and an extension worker with the N.S. Department of Agriculture and Marketing, Gerald Smeltzer has been recognized for his work in areas of livestock and livestock feeds, and apiculture. He was also considered a driving force in the 4-H program.

He is well-known for his work with Agriculture Canada on new varieties of corn for silage and grasses, legumes, soybeans, fababeans, field peas, and small grains. This work laid an important foundation for the livestock feed industry in eastern Canada.

A founding member of the Nova Scotia and Maritime Beekeepers Associations, he served as Secretary of the provincial organization for 25 years. His interest in the further development of the apiculture industry led him to teach beekeeping courses for over 14 years and to serve as Chairman of the Atlantic Winter Fair Honey Booth for 25 years.

In 1966 Gerry Smeltzer was named Annapolis Valley Man of the Year in appreciation of his efforts. In 1987 he was awarded the Fred Rathje Memorial Award by the Canadian Beekeepers' Association.



At the Atlantic Hall of Fame ceremonies, l to r, Helen and Gerry Smeltzer, Andrew Maxner, daughter Nancy Maxner, Janet and Barry Maxner, son Gary Smeltzer, daughter Margaret Higgins, Amy Higgins, Dr. Terry Higgins. Grandchildren missing from photo: Anne and Beth Higgins.

Coffin had been with the Agriculture Canada research branch in Guelph since 1982 and is responsible for the release of four new potato cultivars: Red Gold, Rose Gold, Eramosa, and Saginaw Gold.

In response to a query from us, SHARON NUSSEY, BSc(FSc)'72, who was named the President of the Canadian 4-H Council last year, kindly sent us an up-date on her news and activities. Sharon has been a Director on the Council representing the New Brunswick Department of Agriculture since 1981. Sharon has been with the N.B. Department of Agriculture since 1973, starting with her career in Dalhousie as a Home Economist. In 1975 Sharon and her husband Brian, BSc(Agr)'72, moved to Fredericton and she began working in 4-H as a Regional 4-H specialist. She became the Provincial 4-H Supervisor in 1982 and continues in that position. In 1986 Sharon's responsibilities were expanded to include Agriculture Training and Agricultural Awareness.

Sharon and Brian have three children: Lisa, 12, Patrick, 10, and Barbara, 6. The two older ones are in French Immersion and Barbara will enter the program in Grade 4 as the early immersion was discontinued before she started school.

Sharon is only the second New Brunswicker to be National 4-H President. New Brunswick is the only province in Canada where membership in 4-H has not dropped since 1980; all the others have shown a significant fall. The following is from an interview with Sharon Nussey printed in an issue of Farm Focus last year. "Sharon is examining the education system in hopes that she can implement 4-H and agricultural teachings into the classroom. 'The problem that we are facing now is that not enough young people are interested in agriculture and we're afraid that the industry will go downhill,' Sharon said recently. 'What they don't understand is that agriculture is not just farming but a multitude of other occupations that are just as essential to keep the industry running.

" 'We're working closely with guidance counsellors in the schools and with their cooperation we are getting rid of that negative attitude toward agriculture.' "

SUSAN ARNTFIELD, BSc(Agr)'74, MSc(Agr)'77, received her PhD at the Fall Convocation ceremonies at the University of Manitoba in Winnipeg.

WELDON SMITH, BSc(Agr)'75, formerly 4-H Representative with the N.S. Department of Agriculture and Marketing in Truro, has become Agricultural Representative for Hants County.

RON GAUTHIER, BSc(Agr)'76, has been appointed National Sales Manager for animal health products for Syntex Animal Health.

G. BRIAN HELLYER, BSc(Agr)'77, is Director, International Quality Assurance, Coca Cola Foods Canada.

LUCIE (DESJARDINS) McNEIL, BSc(Agr)'78, a CBC Vancouver broadcaster, was one of 30 journalists from around the world chosen for the Journalists in Europe program funded by governments and media organizations in the EEC.

RANDAL GOODFELLOW, BSc(Agr)'80 has been appointed Senior Manager, Agriculture, central and eastern Canada, for the Bank of Montreal. He is based in Ottawa.

VASILE (GLATIOTIS) KLAASSEN, BSc(Agr)'80, has been appointed Regional Soil Conservation Coordinator with Alberta Agriculture in Airdrie.

CHARLES VINCENT, MSc(Agr)'80, PhD'83, was awarded the Prix Jean-Charles Magnan 1989 by l'Ordre des agronomes du Québec as the author of the best extension paper in agriculture.

MARIO THERRIEN, PhD'81, barley breeder at Agriculture Canada's Brandon, Man, Research Station will assume section-head duties while the head of soil and plant

science research is in Ottawa for a year.

PHILIPPE DUBOIS, Dip'83, has been appointed as the representative for the Lanaudière, Laurentians, Abitibi, and other regions north of Montreal for Les Produits Veterinaires Dispar.

GUY FORAND, BSc(Agr)'83, has been appointed Sales Manager for Quebec for DeKalb Canada Inc. As well as being Sales Manager, Guy will be in charge of coordinating the activities of the DeKalb distributors in the province.

PATRICK LECAVALIER, Dip'84, has been appointed Product Manager of Milking Systems for Alfa-Laval Agri and is working out of the head office in Peterborough, Ont.

KELLEY ALLEN, BSc(Agr)'87, with Vetrepharm Inc., has been transferred to western Ontario and is now working out of Woodstock.

Move to CNR

News from former Mac student Jim Feeny is that Jim is no longer a producer for CBC's Country Canada. He is now Assistant Manager, Grain Communications, for the Canadian National Railways. Jim is still based in Winnipeg.

Deceased

W. EDWARD LINDSAY, BSA'29, on December 2, 1989, in Dorval, Que.

RALPH E. RICHARDS, BSA'30, on January 6, 1989, in Lambeth, Ont.

RUTH (MacKENZIE) WILSON, BHS'35, on November 10, 1989, in Brockville, Ont.

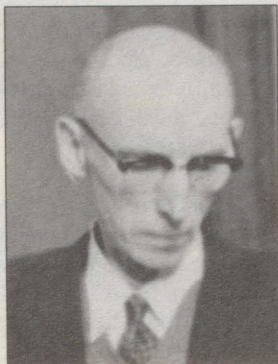
JAMES McCOOL, Dip'38, of Sheenboro, Que.

PHYLLIS (CREGEEN) FENWICK, Handicrafts'55. No further information.

GUILLERMO VALENCIA, BSc(Agr)'87, in September 1989 in Montreal, Que.

**Emeritus Professor William Rowles
1899-1989**

Professor Rowles died peacefully, on November 15, 1989, at the age of 90. With him a part of the history of Macdonald College has passed away. Bill affected



those fortunate enough to know him as a teacher, a scientist and - above and beyond that - through the warmth of his personality. Any tribute to him is bound to be personal.

I have not had the good fortune to hear a lecture given by Bill Rowles; I always envied his former students in that regard. And others among my colleagues could have written a tribute to him equally well, or perhaps better. But none could have appreciated more keenly the unwavering, quiet and generous moral and intellectual support he offered to our small band of agricultural physicists to the last days of his life. We did not try to fill his shoes, but we strove to merit his so generously offered respect and affection.

Professor Rowles described his life, from boyhood through career and into retirement, in a previous Macdonald Journal article ("What a wonderful time it has been!", February 1984). Born in Manchester, on August 17, 1899, he came to Manitoba in 1910. Five years later, when homesteading became an option, his family moved to a farm in Saskatchewan. This fact, combined with a love for physics which he discovered during his adolescence, lay at the root of his great ability to make physics real in an agricultural and environmental setting. He graduated with Honours, with a BSc in physics from the University of Saskatchewan in 1924, and with equal distinction, obtained his Masters and PhD degrees in physics at McGill in 1926 and 1928, respectively. Before finishing his PhD, Bill was appointed part-time lecturer at

Macdonald College, where he joined the regular staff in 1928 and became chairman of the Department of Agricultural Physics in 1930. In 1931 he married Laura Chalk, who had obtained her PhD in physics at McGill on the same day as he did, and who became a lifelong companion in human as well as professional terms, holding a teaching appointment at Macdonald College for extended periods of time.

As detailed in his own Macdonald Journal reminiscences, the years at Macdonald College up to his retirement in 1970 spanned the deanships of Professors Barton, Brittain and Dion, a World War and a post-war boom of buildings and programs. He witnessed the disappearance of the golf course and the bowling green from campus, and he fanned the flames of home-made creativity at a time when material rewards and commercial cultural entertainments were sparse. Bill's research focussed mainly on spectroscopy and soil physics and he was in demand by agricultural chemists for whom he built and designed spectrophotometers at times of limited external funding. He brought the first electron microscope to the campus, and it was under his chairmanship that work on radioisotope tracer techniques was started by Professor Fraser Oliver.

Former students will probably remember Professor Rowles primarily for his virtuosity in teaching, which was unmatched at Macdonald College and unique within the university. His enthusiasm for the subject fused with his flair for the dramatic and his love for his students. Childless, he and Laura lavished a parental affection on their students which was richly returned. It is a fitting tribute and honour that the Class of '44 recently established a scholarship "in recognition of the friendship" of Drs. William and Laura Rowles. Bill was proud of his former students, including those who rose to prominence like Dr. Darol Froman, associate director of research at Los Alamos and Dr. Arthur Snell, associate director of the Oak Ridge National Laboratory. At a time when budgets for teaching equipment were small, he employed practical skill and creative insight into building demonstration equipment

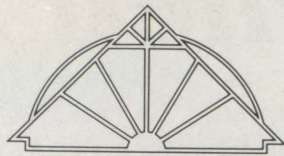
that ranged from the dramatic to the humorous, some of it still in use today. As a fledgling staff member at Macdonald I spent many delightful hours pondering the mysteries of his creations and - whenever I called him for help - he was eager and happy to oblige. In addition to his regular and heavy teaching duties he was Senior Lecturer in the wartime McGill training of Radar technicians and after the war he participated in the summer teaching of accelerated courses for engineering and BSc students.

Bill retired from active duty at the age of 70 but he never retired from his interest in the affairs of the college in general, and of agricultural physics in particular. And his mind was never far from his students with whom he felt a bond of affinity beyond the eventual limitations of physical frailty. He was proud to be the first recipient of the Mastery for Service Award, given by the Macdonald Branch of the McGill Graduates' Society in 1980. He and Laura were faithful and cherished participants at graduate reunions. A continuing source of encouragement to his colleagues, he was an articulate man of an unfailing friendliness which remained with him to the end. He was an active man with many hobbies and interests that betrayed his unique blend of gentleness, imagination, and love for the practical: playreading, gardening, wood and metal crafts, including clock repair. He was a poet and he sang in the choir of Union United Church for 40 years and was, during the final years of his life, an active volunteer at the Ste. Anne Veterans' Hospital.

The end came quietly for Bill Rowles. As she had done throughout his life, his beloved Laura stayed with him and held his hands as he slipped away. May these words, inadequate as they are bound to be, stand for all those of us who knew him and who will treasure our very own memories of this exceptional man.

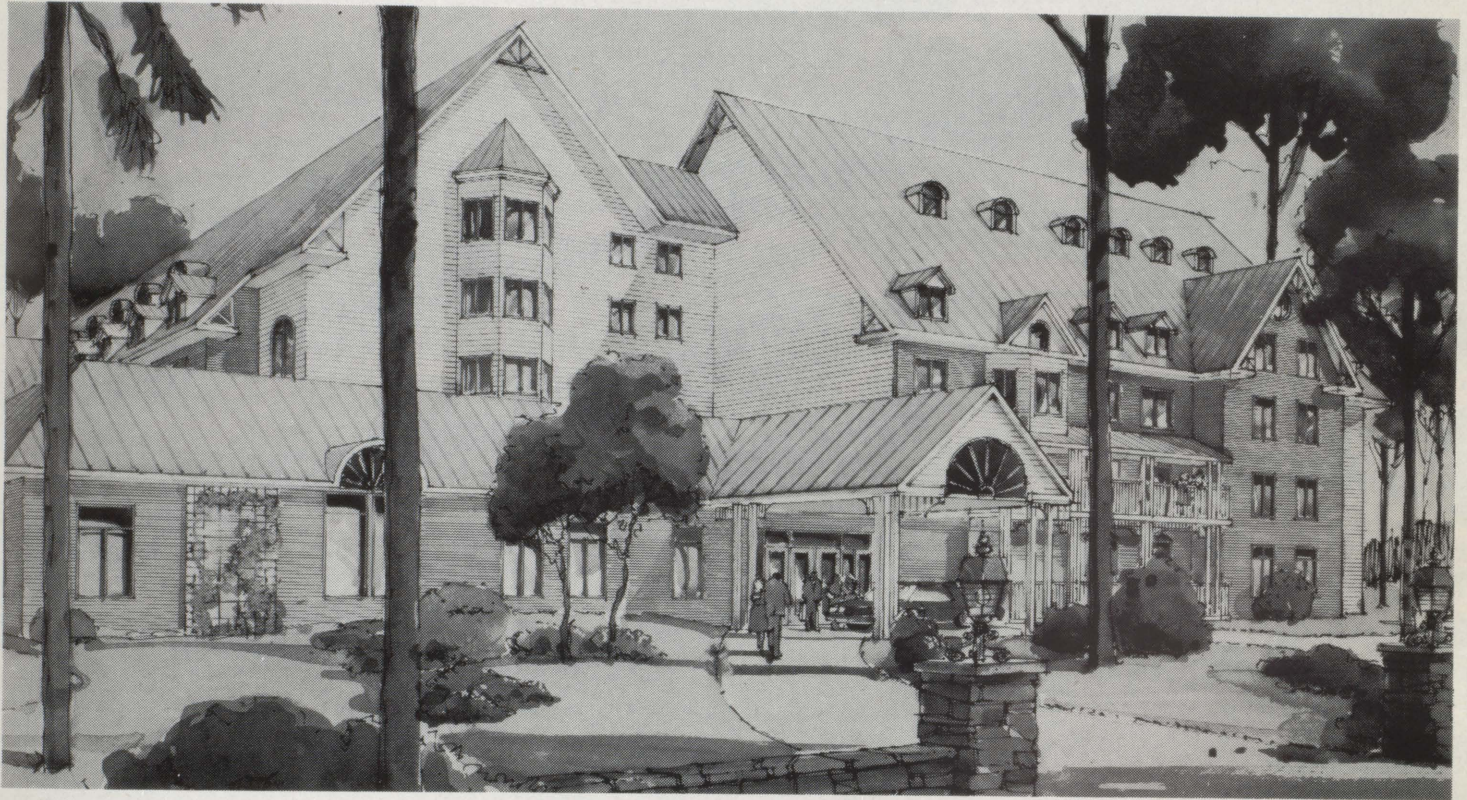
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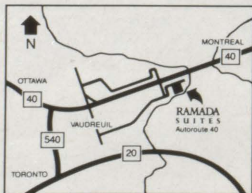
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